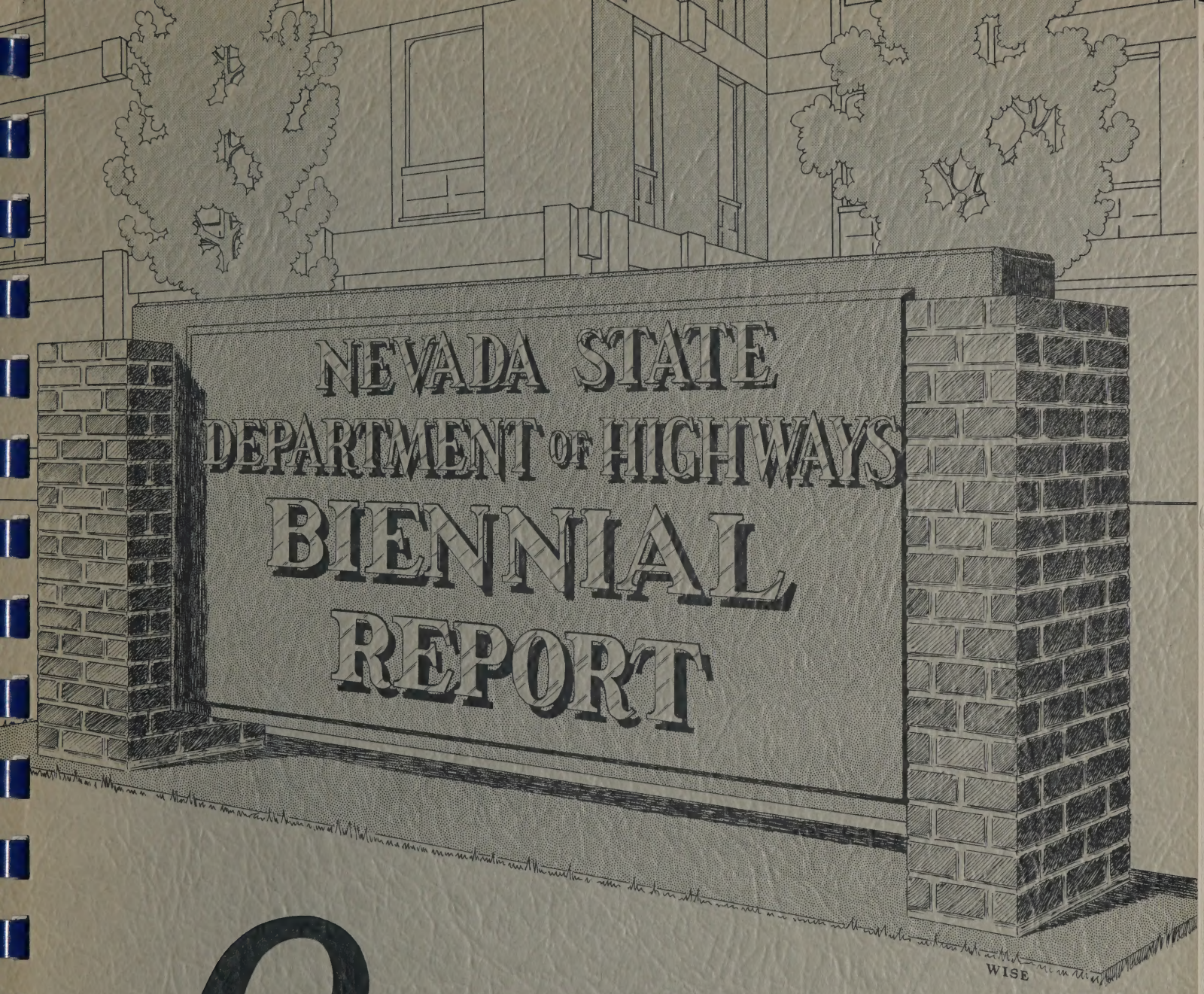


# Fiscal Years 1965 thru 1966

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STATE OF NEVADA

# TWENTY-FIFTH BIENNIAL REPORT

FISCAL YEARS 1965 - 1966

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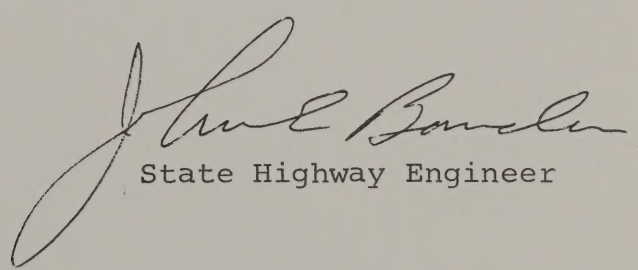
DEPARTMENT OF HIGHWAYS

letter of transmittal

To the Honorable Members of
the Board of Directors of the
Department of Highways and
the Nevada State Legislature

The State Highway Engineer respectfully submits this, the Twenty-fifth Biennial Report of the Nevada Department of Highways covering the fiscal years 1965 and 1966.



State Highway Engineer

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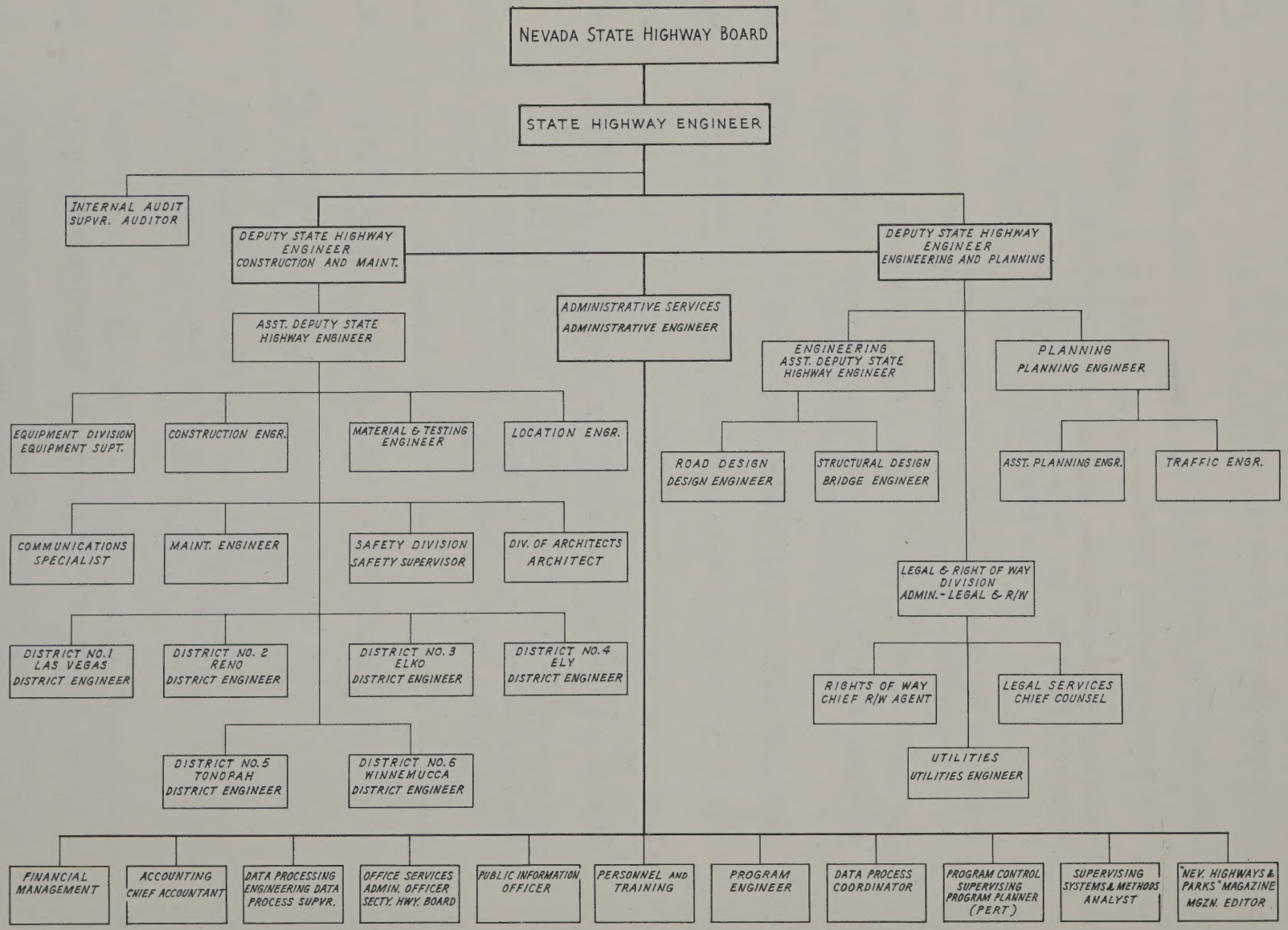
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DISTRICT ENGINEER
RIGHTS OF WAY
CHIEF R/W AGENT
LEGAL SERVICES
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UTILITIES ENGINEER
FINANCIAL MANAGEMENT
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ENGINEERING DATA PROCESS SUPVR.
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ADMIN. OFFICER
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PERSONNEL AND TRAINING
PROGRAM ENGINEER
DATA PROCESS COORDINATOR
PROGRAM CONTROL
SUPERVISING PROGRAM PLANNER
(PERT)
SUPERVISING SYSTEMS & METHODS ANALYST
"NEV. HIGHWAYS & PARKS" MAGAZINE
MGZN. EDITOR

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| Harvey Dickerson, Attorney General | Member |
| Keith Lee, Controller | Member |

## Department Administrators

| | |
|---|---|
| W. O. Wright | State Highway Engineer |
| R. E. Eldredge | Deputy Highway Engineer (Field) |
| John E. Bawden | Deputy Highway Engineer (Office) |

Effective July 1, 1966

| | |
|---|---|
| John E. Bawden | State Highway Engineer |
| Ralph Ottini | Deputy Highway Engineer (Office) |
| George Griffith | Acting Deputy Highway Engineer (Field) |

## Division Administrators

| | |
|---|---|
| A. G. Kinne | Asst. Deputy Highway Engineer (Design) |
| D. H. Hays | Administrative Engineer |
| Leonard L. Lindas | Administrator, Legal Services, Right of Way, and Utilities |
| O. W. Walker | Chief Road Designer |
| W. A. Odell (Apptd. 7/6/66) | Chief Structural Designer |
| Orvis Reil | Chief Planning Survey Engineer |
| James T. Wallace | Chief Right of Way Agent |
| Louis K. Koontz | Utility Engineer |
| James H. Thompson | Chief Legal Counsel |
| Edward Marriage (Apptd. 7/6/66) | Construction Engineer |
| L. W. Little | Chief Materials and Testing Engineer |
| Frank Quilici | Highway Equipment Superintendent |
| Victor W. Clyde | Maintenance Engineer |
| Bryant Clary (Apptd. 9/28/66) | Chief Traffic Engineer |
| W. H. Gibson | Location Engineer |
| Forest R. Hall | Urban Transportation and Planning Engineer |
| Stanley D. Sundeen | Administrative Officer and Secretary to Board |

Cont.

| | |
|---|---|
| Henry L. Clayton | Personnel Manager |
| Clarence S. Eiche | Chief Accountant |
| George Smith | Training Officer |
| Joseph A. Moore | Safety Supervisor |
| William F. Engel | Public Information Officer |
| Curtis Foltz | Engineering Data Processing Supervisor |
| Remo Albertini | Supervising Internal Auditor |
| Donald L. Bowers | Editor, Highways and Parks Magazine |

## District Engineers

| | |
|---|---|
| Jack Parvin, District Engineer<br>Owen Joseph, Asst. District Engineer<br>Vernon Sharp, Asst. District Engineer | District One, Las Vegas |
| M. J. Colletti, District Engineer<br>Dale Kulm, Asst. District Engineer (Apptd. 7/6/66)<br>A. A. Howard, Asst. District Engineer | District Two, Sparks |
| H. H. Mayer, District Engineer<br>Grant Bastian, Asst. District Engineer | District Three, Elko |
| Allan K. Dalbey, District Engineer (Apptd. 8/8/66) | District Four, East Ely |
| C. L. Brown, District Engineer | District Five, Tonopah |
| Dale V. Rose, District Engineer<br>Joseph Souza, Asst. District Engineer | District Six, Winnemucca |

# INTRODUCTION

Nevada can be proud of the accomplishments of its highway program during the past biennium. The 1965-66 biennial period was the most active in the Department's history with over $110,000,000 spent on highway activity.

More progress was made toward completing the Interstate system than during any previous two-year period. Freeway work was started in the important urban areas of Reno and Las Vegas. The long-awaited relocation and reconstruction of U. S. 93 between Glendale and Alamo, and U. S. 50 over Carroll summit was undertaken, and as the biennium closed the new routes were nearing completion.

The record achieved during the last biennium is certainly impressive, but past accomplishments aren't going to solve future problems. To meet the changing needs of the State, the highway program must be ready and able to change. For this reason, the Department now faces one of the most crucial points in its nearly half-century of operation.

No longer is it a question of getting the State "out of the mud." No longer can Department planning center around the Interstate system and its completion. "Cow trail" roads are a thing of the past, and nearly two-thirds of the freeway program is finished or under construction. The urgent problem now facing state road planners is what direction to go from here.

Nevada is no longer just a state with wide, open spaces and more cows than people. Over three-quarters of the State's population and its motorists now reside in the urban areas of western and southern Nevada. Most of Nevada's tourist traffic is centered in these areas, as well. Future highway activity will have to meet the needs resulting from this population growth and urban development.

The dilemma confronting the Highway Department lies in the planning area. In this state, which relies so much on appropriation of federal highway funds for its road-building program, future activity must be based on this anticipated revenue.

Cont.

Nevada, along with all other states, has had no indication from the federal level what the future holds for freeway construction after the Interstate system is finished in the early 1970's, or what changes may be made in allocating funds for Primary, Secondary, and Urban construction. Yet, the critical stage has been reached where improvements must be made in certain rural sections of the State's Primary and Secondary highways and on portions of these routes in the urban areas. Traffic and motorist safety both demand these changes, and soon.

Based on recent and current allocations of federal highway funds, much of the work that should be done now may have to be postponed until adequate funds are available. However, highway planning hasn't stopped nor will it. Projects currently on the needs list, on the location schedule, and on the design boards reflect the Department's policy of working for the future, of studying the State's needs and making every effort to fulfill them. Plans are being developed for urban expressways, for the possible expansion of the Interstate system after 1973, and for improvement of other sections of the State system. When funds are available, the Highway Department will be ready to use them.

# ADMINISTRATION

During the 1965-66 period, development continued in administrative activities initiated during the previous biennium. Major expansion occurred in the internal audit, training, PERT, financial control, management development, and service programs that were started in 1963 and 1964 fiscal years.

All areas of Department operation have come under the scrutiny of an enlarged internal audit section. What began in construction has spread to all engineering and administrative functions.

Formalized in-service training has become a vital part of Department activity with personnel from most of the divisions participating. Technical instruction needs, which formed the basis for initiating the training program, have become but a part of the section's overall responsibility. As the biennium closed, focus was shifting to the area of management and its problems.

The use of data processing equipment and procedures in planning and controlling pre-construction progress of highway projects has been greatly expanded. As the biennial period closed new and faster computing facilities were being installed in order to meet the growing demand for this service in fiscal and engineering activity.

Several organizational changes were made to improve administrative efficiency. A supervisor was hired to coordinate the work in the mail and file sections. Financial control was strengthened with the addition of a fiscal analyst from planning. A system analysis section was organized near the end of the biennial period. Plans were laid to begin position and organization studies aimed at more clearly defining the responsibilities and authority assumed by the various administrative sections.

In the upcoming two fiscal years, the Administrative Engineer and the administrative program will be concerned with developing better management procedures, more effective fiscal and engineering controls, and expanding the services of this division to meet the increasing needs of the Department.

## ACCOUNTING

In the past two years, the accounting section of the Nevada State Highway Department has had to expand in order to maintain the pace created by the increase of activity within the Department. The volume of work being processed through the section continues to increase with the rapid acceleration and maintenance of the Interstate construction program; commensurate increases in work areas and responsibilities have necessitated increases in personnel, and further reliance upon computer capacities and capabilities.

It is anticipated that with the installation of the IBM System 360, reporting procedures and programs will be entirely revised and refined to present to management even more pertinent and succinct financial and operating information. It will also enable accounting to supply management with these reports in a much more timely fashion, with little interim time between the end of the reporting period and the resultant summarized information.

## INTERNAL AUDIT

Highway Department activities have become increasingly complex as the work of completing planned road systems progresses. This increase in complexity has forced management to delegate more and more of its authority in order to discharge its responsibility effectively. This wider delegation of authority and responsibility has motivated management to authorize an expanded internal audit section to serve as an independent appraisal function reporting directly to the Highway Engineer.

As of July 1, 1966, a total of ten positions were authorized; eight auditing positions, one clerical, and one supervising position. Management's instructions were to expand internal audit review into all phases of highway activity in order to provide objective reports on the operating practices of all divisions.

Cont.

In compliance with management's instructions internal audit has undertaken reviews of the following functional divisions:

Construction

Periodic visits to all construction projects for the purpose of reviewing project records in order to report on compliance with established procedures and to insure that quantities submitted for payment on monthly progress estimates are supported by required documentation.

Utility and Railroad Relocation Costs

Preaudit of all bills prior to payment to insure that the billing as submitted conforms to the agreement between the State and company; that the billing includes only those costs specifically incurred in the relocation and/or removal of the company's facilities due to State highway construction; and that all credits due the State for betterment or salvage of existing facilities are reflected in such costs.

Right of Way and Property Management

Review of policies and procedures and evaluation of internal controls incidental to the procurement of right-of-way.

This requires audits of:

1. appraisal procedures and appraisals
2. appraisal review procedures
3. negotiation procedures
4. settlement procedures
5. property management procedures
6. assistance for displaced families and businesses

Personal Services - State Forces

Audits to determine whether established personnel policies, procedures and practices are being followed. Checking of cost codings to establish the accuracy of the preparation of source cost records.

Cont.

Additional audit programs are planned to review fiscal and accounting procedures, maintenance and store operations, and all other areas of Highway Department operations.

## PERSONNEL AND TRAINING

The functions of administering a complex personnel and training program are administratively under the direction of the Personnel and Training Manager.

### Personnel

The average number of highway employees has decreased by approximately 200, as compared to the number of employees during the fiscal year 1963-64. The decrease in construction personnel is attributed to the completion of a sizable portion of the Interstate highway system. The average total number of employees has decreased from 1,600 in July 1964 to 1,400 in July of 1966. It is anticipated that a substantial increase will be experienced in roadway maintenance as a result of the increased road miles of our Interstate highway system. There has also been a slow increase in the administrative division of the Highway Department.

A new section entitled, Utilities, was established, through a reorganization of the right-of-way division. Two new sections, landscape and systems and methods, were created, the former under the direction of the roadway design division and the latter directly responsible to the Administrative Engineer.

### Recruitment

The recruitment of construction employees has declined in general and has increased for positions within the administrative services. Greater emphasis has been expended in the recruitment of various specialized classes, such as management analysts.

Cont.

For the first time, the highway personnel office participated in out-of-state recruitment for graduate civil engineers. This was necessary due to the poor results experienced in the normal recruitment through newspapers and other forms of communication. The recruitment for graduate civil engineers at various engineering colleges and universities in Utah, Colorado, and Arizona was of little success. Only 25% of our needs were realized.

An excess of 200 written and oral examinations were conducted during the fiscal years of 1964-66.

## Classification Studies

Through administrative direction classification studies were held to a minimum during the latter part of 1965 and the first six months of 1966. During the past biennium 97 classifications were conducted and 33 new classes established.

## Turnover

Turnover, as a result of promotions, dismissals, and resignations, has been on a continual basis. Turnover in the clerical, maintenance, and subprofessional engineering classes was most prevalent, which is believed to be primarily a result of low entrance salaries. For the period of July 1, 1964, through June 30, 1966, 703 new appointments were made, 619 employees resigned, four were dismissed, and 49 terminated.

## Retirement

A law providing for mandatory retirement passed by the 1965 Nevada Legislature, resulted in the compulsory separation of 46 employees. Eight other employees were given extentions of six months in accordance with this law.

## Training

The 1965-66 biennium saw the creation and development of the Department's first formalized training program. A training officer was hired, a training committee appointed, and training policies adopted during the first half of the 1965 fiscal year.

Cont.

Since that time the training section has provided for Department personnel over 170,000 student hours of instruction. Nearly every facet of highway activity was covered, and nearly every area of the State served.

As the program developed, initial emphasis was placed on the instruction of field engineering personnel. At almost the same time training was provided in the areas of right-of-way and maintenance.

During the first year, classes were given for technical mathematics, field reporting, surveying and measurements, highway materials, titration testing of cement treated base materials, radiological procedures for operating equipment containing radioactive material, equipment maintenance and operation, street and highway drainage, traffic estimation, material strength, and right-of-way appraisal, negotiation, and legal techniques.

In the 1966 fiscal year, instruction also covered basic field testing, concrete inspection, beautification project inspection, orientation of new employees, handling of explosives, axle repair and rebuilding, electrical tune-ups, management development, structural design of pavement, computer operation for design engineers, instructor training for engineering and maintenance personnel, and first aid.

While this in-service training was underway, instruction was provided in other areas where employees attended classes on their own time. Among the subjects offered were: preparation for the professional engineering registration exam; legal secretarial training; advanced surveying, geodetics, and state coordinates; and college-level construction engineering. These voluntary programs provided 7,500 student hours of instruction to highway employees.

Cont.

Continued and expanded from the 1963-64 biennial period is the cooperative training program with the University of Nevada. Civil engineering students are receiving formal classroom instruction at the university during the school year and on-the-job training during the summers. The training starts with high school graduates who have been accepted for entrance into the civil engineering program at the university, and is completed with the students who receive their BS degrees. As long as their grades are satisfactory, they are continued in the program. Initially the coop students are assigned to maintenance, then to field construction, then to a Headquarters division, and then perhaps back out to a field crew for their final practical experience.

Since coop training began in 1963, over 50 students have entered the program. As the biennium closed, 49 were still enrolled. The Department will be provided with graduate engineers from the program during this calendar year.

In addition to establishing the various areas of instruction, the training section has directed several training films produced by the Department's information section during the past biennial period. One film has been used in the instruction of field testers; another in the orientation of new employees. Being prepared for use at the close of the biennium were two films on maintenance safety. Approved for production during the 1967 fiscal year was a film on field sampling.

The demand for technical skills and management abilities continues to increase in the highway program. To meet this need it is anticipated that training and the production of training materials also must increase. In the forthcoming biennial period, particular attention has to be given management training. At the same time, the requirement for skilled technicians must be met.

# FEDERAL-AID PROGRAMS

The programs section prepares and submits to the Bureau of Public Roads detailed programs of proposed projects for the utilization of apportionments for each class of federal funds. The programs cover preliminary engineering, right-of-way, and construction. These programs are the initial commitment on the part of the Bureau of Public Roads to participate in the proposed project.

The five classes of federal-aid funds are Interstate, Primary, Secondary, Urban, and Highway Planning and Research. Congress initiated the highway beautification program in fiscal year 1966 which allocated three additional classes of funds to the State. The additional funds are control of advertising, control of junkyards, and landscaping and scenic enhancement. Federal Lands Highway funds have also been allocated to the State for use on specific projects. The Federal Lands funds are allocated on a needs basis as determined by the Bureau of Public Roads.

There were $55,415,614 of federal-aid funds, $403,081 of beautification funds, and $900,000 of Federal Lands funds available for programming during the biennium.

The program section submitted 125 federal-aid programs (61 in F.Y. 1965 and 64 in F.Y. 1966), 30 beautification programs (all in F.Y. 1966), and 2 federal lands programs (one (1) in each F.Y.) during the biennium. The programs obligated $47,474,482 of federal-aid funds ($15,648,293 in F.Y. 1965 and $31,836,189 in F.Y. 1966), the entire $403,081 of beautification funds, and the entire $900,000 of Federal Lands funds.

The work load of the programs section was increased by 50% with the advent of the beautification program in F.Y. 1966. The total work load in the biennium increased by 70% as compared to the previous biennium. There are two employees in the programs section, which is the same number employed during the previous biennium.

# PROJECT MANAGEMENT

The pressures exerted by the public to open new roads as quickly as possible, as well as the pressures from the various government agencies to maintain close control on highway construction, gives rise to a significant management problem. This problem encompasses the planning, scheduling, and control of many complex Highway Department activities in a manner which will insure timely progress based on a realistic plan of highway development.

Investigation revealed that the most promising solution to the problem involved the application of PERT or network technology to the internal managerial process. The ensuing system design resulted in the development of a project management system. This system improves planning, establishes target dates of performance, indicates the requirement for manpower and financial resources, and provides a ready means for statusing plans, monitoring accomplishments, and identifying potential problem areas.

The project management section is primarily concerned with the internal activities of the Department, i.e., those activities which the Highway Engineer is directly responsible for administering. External activities, such as those of the Bureau of Public Roads, U. S. Forest Service, Bureau of Land Management, utility companies, engineering consultants, and other organizations, are also incorporated into the system. Although these activities are vital to the timely design and acquisition of right-of-way of highway projects, they are of necessity considered to be of secondary concern from a management system standpoint, for the Highway Engineer can not exercise direct control over their performance.

At present this section is monitoring 32 Interstate projects, 25 Primary projects, and 30 Secondary and Urban projects. Monthly reports are prepared for highway management for their review and edification on all 87 projects. During the biennium all activities necessary to the award of a construction project have been monitored for thirty-two projects that are now under construction.

## CONTROL ANALYSIS

1. Financial management monthly reporting was initiated and continued in the following forms:

   a. Yearly Work Program compared to total expenditures by grouped items
   b. Highway Financial Management Status
   c. Voucher Status - All projects
   d. Monetary Voucher Status Current Projects

2. Issued quarterly, a project cross index, including revision and procedures, for Department-wide use.

3. Issued yearly, a publication entitled "Nevada Highway Department Factual and Statistical Information."

4. Initiated and developed for management a legislative bill status report of all legislation affecting the Highway Department.

5. Developed and refined a revenue forecasting system.

6. Developed a projection of possible funds available for programming purposes related to PERT and management decisions.

7. Provided an evaluation of the yearly work program, compared to various funds and revenues available, for management consideration.

8. Initiated preliminary compilation of state highway financing for educational purposes.

9. Projected various expenditure and income items on both a short and long-range basis.

10. Maintained liaison between the Highway Department and related agencies regarding revenue.

# PUBLIC INFORMATION

Near the close of the last biennium, the organization of the public information office and its staff changed radically. In February 1964, the publication of the Nevada Highway and Parks magazine was separated from the activity of this office.

With this separation, came a reorganization of the information section. During the 1965 fiscal year, the information officer assumed administrative and supervisory responsibility for the Department's photo section and the audio-visual producer. At the same time, an assistant information officer was added to the staff.

During the 1966 fiscal year, a second assistant information officer was added and assigned to full-time duties in southern Nevada. An increase also was made in the stenographic-clerical staff with the addition of a clerk-typist to handle tourist mail and the newspaper clipping and filing service.

Accompanying the expansion of the staff came additional responsibilities. The job of handling out-going tourist mail, formerly processed by the mail room, was assumed by the information office. Advertising, transcription, and several other non-engineering functions related to public hearings that were previously handled by the staff of the Administrative Engineer were delegated to the information office. A system for reproducing and filing news clippings and news releases was established by the office. Production of special material for training, personnel, right-of-way, planning, and safety was made the responsibility of the information staff.

In addition to these new duties, information personnel continued to provide the Department and the public with releases on highway activity, displays and exhibits, photos and films, various periodic publications and reports reviewing Department accomplishments, advice and guidance in public relations problems, material and speakers for public events and meetings, and distribution of highway maps.

Cont.

Activity in this section is expected to increase in the coming biennial period, as the highway program continues to grow. Planning is currently underway to provide better service to the outlying districts and communities, to prepare slides, filmstrips and movies for public education on the various aspects of Department activity, to develop programs for use in schools, and to provide for periodic employee orientation on general and special aspects of the highway program.

## PHOTOGRAPHY AND VISUAL-AIDS

During the biennium, the photographic section continued to expand its services to the Department. To its previous work of providing still photos for public information, legal, right-of-way, utilities, training, safety, planning, testing, and other divisions and sections, was added the responsibility of producing motion pictures.

In the past two fiscal years, the section produced four color and sound films for Department training purposes. With the growing awareness of the need for in-service training, has come an increasing demand for film production.

Photo service was expanded, too, to more adequately provide for the requirements of the legal and utility divisions. Most of the photographs now used for documentation and court room presentations are taken by the photo section. The same adjustment has been made to accommodate the needs of the newly expanded Nevada Highways and Parks magazine which is now a quarterly publication.

A centralized camera pool was established at the close of this biennium to make better use of the Department's photo equipment. This service is being handled by the photo section. Plans are currently being developed to establish a central film ordering and supply system in cooperation with the Department stockroom.

Cont.

Activity in the audio-visual section has grown in an equal manner during the biennial period. Increasing demands from design, right-of-way, safety, training, and public information have resulted in a stepped-up program in this area.

While the need for models and displays associated with the Interstate system has lessened, the requirement for models showing proposed projects on the Primary system has greatly increased. The audio-visual producer completed the Department's largest model to date, showing the proposed "High Line" route at Lake Tahoe, during the latter part of the biennium. Work is currently underway on an equally complex exhibit illustrating the pending tunnels and bridges required for the Carlin Canyon section of Interstate 80.

At the same time, emphasis has been given the need for producing slides to inform the public of various highway activities. Such new programs as beautification have required slide production. Upcoming demands from those participating in the Department's new Speakers' Bureau indicate even greater use of this education and training media. Responsibility for this activity has been assigned to the audio-visual producer.

A centralized audio-visual equipment pool has been established by this section. From it the audio-visual producer issues projectors, sound equipment, screens, and tape recorders and provides assistance and advice on their operation.

In order to provide better information service to the various districts, the audio-visual producer, together with the assistant information officer, developed a district display program during the past two years. On a bi-monthly basis, exhibits depicting a variety of highway activities are rotated from district to district.

A motion picture ordering service was initiated for intra-Department use. From a listing of movie films prepared by the audio-visual producer, administrators in the Department may order productions from agencies throughtout the country for previewing or training purposes.

Cont.

During the forthcoming biennium period, the audio-visual producer has planned to begin production of film strips for public school use. These strips will orient students on highway programs of interest to them, as highway careers, anti-litter campaigns, organization and financing in simple terms, and other subjects designed for the grade and high school level of understanding.

## NEVADA HIGHWAYS AND PARKS MAGAZINE

Established in 1936 when Robert A. Allen served as State Highway Engineer, Nevada Highways and Parks magazine was first published as a small black and white brochure. Suspended during World War II, publication was resumed in the mid-forties. Color was introduced at that time and the magazine enlarged to its present size. Until 1964 it continued to appear in a 32-page, four-color format and, to keep up with the demand, the print run was gradually raised to 50,000 copies. Two or three issues were produced annually on an irregular basis during this period, and the magazine was mailed out free of charge without the benefit of planned circulation controls. Annual cost of the operation ranged from around $30,000 to $50,000.

In 1963 Governor Grant Sawyer appointed a five-man editorial advisory board which examined the operation and made recommendations, subsequently approved by the Highway Board, that the magazine be expanded and improved. The editorial advisory board's recommendations were based on the following considerations:

1. Since the primary purpose of the state magazine is to promote Nevada's unique tourist attractions, circulation should be stepped up and distribution should be on a nation-wide basis. Format should be improved and the number of pages increased to achieve a more marketable product. A campaign to promote sales of the magazine should be undertaken, and in all respects the operation would run on a business basis and managed as are other commercial magazines.

Cont.

2. The cost of the expanded operation would gradually be offset by revenues from subscription and newsstand sales and advertisements. Ideally, the magazine would become self-sustaining over a period of several years, but since no new magazine can expect to enjoy overnight success, the cost of subsidizing this state promotional program should be regarded as a legitimate Department expenditure. In this connection, the advisory board noted, every state in the country produces printed or promotional material and several states, including Vermont, New York, Ohio, Wisconsin, Oklahoma, Kansas, Washington, New Mexico, and Arizona, publish state-subsidized magazines similar to Nevada Highways and Parks.

Under the expanded program, the first issue to be distributed nationally went on sale in October, 1964. Since that time eight issues have been produced, the overall newsstand sales pattern increasing during this period from less than 13,000 copies to the current figure of around 23,000. Newsstand sales are being handled through contract with International Circulation Distributors, subsidiary of the Hearst organization in New York, via their outlets in 50 states and Canada. Mail circulation is currently approaching 15,000 copies, controlled and subscription copies. Circulation records are efficiently handled by the data processing section in the Department. Advertising revenues, covering 59 2/3 pages sold in the first eight issues, amounted to $24,765.60. Unsold copies in Nevada are recovered and channeled into promotional outlets. Cost of the operation last year was $215,778.43 including administrative expenditures, while revenues for the same period were $63,157.42. Thus, in the initial sales period covering eight issues, the operation is already over one-quarter self sustaining. Print run for the issue completed as this report was written was 80,000 copies. Depending on market predictions, the print run has varied during the two-year period between 75,000 and 100,000 copies.

The editorial advisory board appointed by the Governor in 1963 continues to serve and to set useful guidance lines with regard to editorial, advertising, and promotional matters.

Cont.

Progress during the two-year transition period has been fully satisfactory in the board's opinion, although sales volumes are lower than anticipated. The general sales trend shows a steady growth and, according to market analysis made by the New York distributor, the sales pattern, in comparison with other new magazines, is as healthy as can be expected. Meanwhile, the new, bigger magazine, has been warmly received by readers everywhere, particularly so inside Nevada where Nevada Highways and Parks magazine is the only publication covering the entire state.

## SAFETY

The safety division in cooperation with the training and public information sections set a precident by producing a safety film on "Highway Maintenance Signing and Signaling," as well as a film on the proper handling of explosives.

These films are being used in a stepped up safety training program for maintenance employees.

A new hard hat program was put into effect for all employees working around overhead hazards.

A safety vest policy was adopted, wherein a fluorescent type safety vest is furnished all employees working on the road surface. It is expected, by wearing of this garment, that the motorist will become more aware of employees and will therefore slow down and keep his vehicle under better control, and thus avoid striking a workman.

Studies were made regarding maintenance signing and sign holders. Conforming closely to A.A.S.H.O. recommendations, several being used were discarded and new signs have become standard. A new sign holder which slips over roadside delineators has proved very effective under most conditions.

Cont.

Statistically, personal injury accidents showed a slight improvement in the frequency column. However, due to four fatalities and two accidents of major scope, the severity rate climbed considerably.

| | Frequency | | Severity | |
|---|---|---|---|---|
| 1963-64 | 16.22 | | 2,173.57 | |
| 1965-66 | 12.86 | -21% | 3,424.89 | +58% |

The general criteria of an effective program is based upon the frequency rate which is the manhours of exposure in relation to the number of lost time accidents, instead of the severity of accidents. Although this record shows the safety program is slightly over the National Safety Council's latest three year report, which is 12.30, it is expected that with an increase in safety training this division's next report will show a much lower frequency rate.

Nine hundred employees have been given eye and reaction tests as the first stage in the Department's driver improvement program. Other phases will incorporate classroom and field observation sessions.

## DATA PROCESSING

In August, 1964, the newly announced IBM System 360 computer was placed on order for delivery in 1966. The growing need for data handling in all areas of the Highway Department's operations necessitated a system of greater capabilities and speed. The major improvements in this new system are increased processing speeds and an ability to store large amounts of data on line with the processor.

Programmer training began in January 1965, and continued through installation date of the system. The "Cobol" language was adopted for use in the accounting and general business areas. A modified version of "Fortran" language was chosen for use in engineering and scientific work.

Cont.

Plans for the conversion of existing programs were formulated along with plans for new systems and techniques. The conversion to system 360 required the full time effort of four system programmers and a part time effort of three additional programmer operators.

During 1965 and 1966 the newly organized central data processing division of the Department of Administration has made use of the Department's computer system in the development of work for other state agencies. It is planned that the Motor Vehicle Department will make use of the new system 360 on a second shift basis. The computer system will be cable connected to remote input and output devices located in the new Motor Vehicle building adjacent to the Highway building.

The next biennium will see development of system 360 in providing improved services in all areas of Highway Department activities. Particular emphasis will be given to the development of a Department information system to provide current information for use in management planning. Remote communications also will be developed with the system to provide for information retrieval and reporting.

## STORES AND PURCHASING

Since the issuance of the last biennial report, the stores and purchasing section has accomplished two contemplated moves mentioned therein.

First: establishing a perpetual inventory on materials and testing division supplies. Thus pertinent information is now available as to names of suppliers, specifications, cost, distribution, balance available, and the time to order again.

Cont.

Second: a perpetual inventory has been set up on data processing cards covering all highway property throughout the State. A constant check is being made to insure that all purchases, transfers, and disposition of items have been recorded correctly and to verify that all items are on hand. This current data is very beneficial when it becomes necessary to consider requests for additional purchases. Sometimes transfers will take care of the situation. Furthermore, this section will be able to maintain better control of trade-ins on office equipment according to date of acquisition. Also excess or worn out property will be kept at a minimum by being submitted to the Nevada State Purchasing Department for disposal.

Since moving into the new Highway building, facilities have been more beneficial for maintaining a larger and assorted stock. This in effect has resulted in considerable savings on many items. Present quarters allow better maintaining of stock control, handling of materials, and filling orders. This is of paramount importance taking into consideration the increased operations as reflected in the following figures:

| | June 1965 | June 1966 | Total Biennium |
|---|---|---|---|
| Stock Acquisition | 138,271.71 | 162,916.90 | 301,188.61 |
| Stock Disbursement | 94,766.63 | 104,862.87 | 199,629.50 |

During the same period, the multi-lith facility in the stockroom was expanded and improved by the addition of two new reproduction machines. Under the supervision of Clyde Dales, the service also included paper cutting, collating, folding, stitching, binding, and addressing much of the printed material distributed by the Department.

Cont.

As of July 1, 1966, the stores and purchasing section was given a new assignment in connection with the objective work program (budget) covering purchases of all office furniture, machines, and engineering equipment for Department offices statewide. A separate record is being kept of the amount of money requested by each district, division, or section and the amount actually allocated. Before a requisition is submitted to the Administrative Engineer for approval, it is first necessary to ascertain from the records if money was appropriated or if the balance is sufficient to cover the cost. When the answer is negative, a letter to this effect must be written to the office who made up the request and, unless a valid reason can be given as to why articles must be procured when no provision was made financially to cover the cost, the requisition may be cancelled. The above policy was adopted to bring about a more rigid control of the objective work program in the future. This will in turn make the people who request appropriations for their requirements far more conscientious of the importance of giving the subject adequate consideration.

## REPRODUCTION AND GRAPHIC ARTS

During the biennium, reproduction handled the requirements of the many sections involved in highway design. The majority of such requests emanated from roadway design (Interstate, Primary, and Secondary) and from planning survey and right-of-way divisions.

This section reproduces a wide variety of specialized photographic work, engineering drawings, and related items. All jobs are grouped into classes. Work is limited by sheet size and minimum printing area of the machines.

Reproduction processes and materials have made tremendous advances in the past four years. Because of this rapid advancement, the reproduction section has an impressive array of equipment with which to perform its many and varied jobs.

Cont.

The present equipment being used includes: two large dri-print machines, one 41 x 41 inch Brown overhead copy camera, one 24" line camera, two large offset machines, one large vacuum frame, one aerial enlarger with other related photo equipment, two fully equipped darkrooms, one Ektalith daylight processor, one self-contained platemaking machine, and one 2400 Xerox Copier.

## COMMUNICATIONS

During the past two years the primary objective of the communications division has been to extend radio coverage to areas formerly considered "dead" areas and to upgrade the radio equipment by taking advantage of the recent developments in space age electronics. Tube type two-way radio equipment has become obsolete and has been virtually discontinued by all manufacturers. The transistor has replaced the vacuum tube in two-way mobile radio equipment and has required the radio technicians to train themselves in an entirely new concept and a different method of servicing. Solid-state, as transistorized equipment is generally referred to, has resulted in much greater reliability and more compact equipment and the elimination of most relays, thereby, reducing maintenance costs and increasing reliability.

The fiscal year 1964-1965 was a very active year. The low-band frequencies were changed to comply with the "East-West Geographical Frequency Assignment Plan" approved by the Federal Communications Commission. Fifty new mobile radios were added to the system as well as several new base stations and remote control consoles. A new transistorized frequency counter was added to the laboratory equipment and made possible accurate calibration of the frequency measuring equipment statewide. New frequency change tone equipment was installed statewide and resulted in high reliability and reduced maintenance costs. A new intercom system was installed in the Ely yard.

Cont.

During the fiscal year 1965-1966 a power line was constructed and the Curry radio facility moved to a new higher location. Pequop Mountain radio facility was developed and the radio equipment moved to the new site. A Radio Operations Manual was written and distributed to all radio operators in an attempt to standardize on radio operation. New radio stations were installed at Mesquite field office and Zephyr Cove field office. A public address and paging system was installed in the new testing laboratory building at Carson City, and a public address system was installed in the new Highway Department auditorium. A paging system was installed in the Reno yard. Fifty new mobile radios were added to the system bringing the total to 420 mobiles. Radio surveys were conducted from Angel Peak to Sober Peak, and Sober Peak radio facility is being developed to extend radio coverage on Highway 95 for the Highway Patrol as well as the Highway Department. Eureka Mountain is also in the process of being developed as a radio facility.

The communications division has cooperated fully in the maintenance and installation of radio equipment for other State and local government agencies and will continue to make its facilities and personnel available.

During this reporting period the Highway Department cooperated with the Department of Administration and the Office of Civil Defense, in consultant services to survey the communications capability of the public safety services and requirements for communications for all State agencies. This resulted in a feasibility study which was completed in May 1966, which recommended a State owned communication system between the Reno-Las Vegas area which would accommodate relay requirements for the mobile radio services for the State Highway Department, the Highway Patrol, the Fish and Game Commission, the Division of Forestry, and the University of Nevada. These facilities would support the relay functions associated with the mobile radio capability of the State agencies as well as provide telephone and telegraph administrative channels.

Cont.

The study also projected a growth to 120 voice channels over a ten-year period which would cost 1.7 million dollars. This is a 5 million dollar saving over what the cost would be if the service was provided by a public utility. The study developed the fact that the State currently has about $650,000 invested in mobile radio equipment. The total investment, including buildings, testing equipment, repair shops, etc., revealed an investment of 1 million dollars to 1964. Of this total, $410,000 is the estimated investment in this communication facility by the Department of Highways.

During this period the mobile radio capability of the Highway Department has grown from 370 units to 420 units. One area in the southern part of the State will be given additional coverage to meet the present gaps in communications by an addition of a mountain top station which is to be developed three miles west of Springdale, operational by January 1967. This site will also be utilized and occupied by the Highway Patrol, as well as the Fish and Game and Division of Forestry. An additional site is programmed in this period for Eureka Mountain. This will increase the coverage necessary in this area and fill gaps which currently provide a very poor communication capability. It is known at this time that the Highway Patrol also plans to utilize this facility when it is developed by the Highway Department.

Continued support for maintenance of mobile radio equipment has been rendered to other State agencies and local governments upon request. Charges have been assessed on the basis of cost of labor and parts. The Department has a unique maintenance capability for mobile radio service in that it does have repair shops in each of six districts.

Plans are completed to install a data transmission cable connecting the Department of Motor Vehicles with the 360 computer in the Highway Department to facilitate cooperative operation of the 360 computer.

## PLANNING

Planning activities and responsibilities continued to expand during the past two fiscal years.

As during the previous biennial period, planning included activities such as road inventory, road life, traffic, special studies, cartography (mapping), geodesy, photogrammetry, financial, planning data processing, and flight operations.

The third cycle of statewide road and street inventory continued during the biennium. Approximately 4,000 miles of roadway on the State's Primary and Secondary systems were rated during each of the two years of the biennium for condition, safety, and service.

Additional county maps were prepared, traffic flow maps were produced, and the State general highway base map was again revised.

As part of the urban transportation studies, home interviews for the origin and destination of motorists in the Las Vegas Valley area were conducted. Additional work was done in connection with the Urban Transportation Study of the Truckee Meadows area.

## INVENTORY

This section compiled and published the following logs:

1. Federal-aid Interstate System
2. Federal-aid Primary System
3. Federal-aid Secondary System
4. Non-Federal-aid State Route System
5. U. S. Routes and Alternates
6. Status of Road Systems
7. Log of Divided Highways

The third cycle of the reinventory of the rural road system is in progress with two men working full time on the project. Lyon, Pershing, and Clark counties were completed during the biennium.

Cont.

The continuing reinventory is necessary since rural roads under the jurisdiction of local agencies are from time to time improved, realigned and shortened, and in some cases abandoned through disuse. Changing of culture features, the extension of corporate limits, and an insistent demand for more accurate maps are all factors necessitating a continuous reinventory.

Streets of all incorporated cities in the State and all unincorporated towns of 1,000 or more population are inventoried each year for mileage, width and type.

Streets in most of the cities have increased in mileage. The total street mileage in 1960 was about 883 miles as compared to 1,209 miles in 1965.

The data from all of the inventory projects are coded and set up for computer tabulation, the results being used for vehicle mile tabulations and data for other agencies.

The Sufficiency Rating Study, which is a survey of actual existing road conditions as compared with current design standards, is a continuing one on road deficiencies and inadequacies and provides a guide for construction priorities. The data obtained from the study contribute much to the State Highway Department in the preparation of a system of priorities for construction, reconstruction, and maintenance, based on actual physical needs. It provides legislative representatives and the general public with a readily understood and yet scientific approach to the over-all highway problem.

Despite modifying circumstances which may occur from year to year, each annual inventory compiled to establish priorities for road improvements offers concrete evidence on which informed decisions can be made within the framework of the Department's continuous programming plan.

The inventory section is responsible for the preparation of semiannual tabulations of mileage and cost distribution tables on the Federal-aid Secondary system by county. This tabulation is used as a guide for the selection of Federal-aid Secondary routes and the reconstruction of existing Secondary routes.

Cont.

During the biennium the physical inventory of streets and roads in the Truckee Meadows Urban Transportation Study area was completed and the same inventory for the Las Vegas Valley Area Transportation Study is well on the road to completion.

The inventory section compiled acreage tabulations of land use in the Truckee Meadows Urban Transportation Study area.

The Highway Needs Study, Functional Classification Study, a study on the feasibility of mile posts along the federal-aid routes, the Scenic Route Study, Interstate Travel Way Study and other studies for the Bureau of Public Roads were completed or in some cases have been carried on as continuing studies.

## ROAD LIFE

The following publications and reports were compiled on an annual basis to distribute information concerning the status of state-interest roads:

Control Section Index
Control Section Index Maps
Federal-aid Secondary Descriptions
State Mileage Tables
Maintenance Cost Study

The Maintenance Cost Study is a report required by the Bureau of Public Roads. The first submission of this report was sent to the Bureau on August 20, 1964, and covered the 1963-64 fiscal year. Since that time two other submissions have been made and its value as an historical trend in maintenance cost is apparent. The report shows the maintenance of specific maintenance functions on selected sections of the completed Interstate highway system, along with the physical characteristics, location and construction and reconstruction cost. These costs are shown both on a yearly basis and a cumulative basis for historical comparisons. The study will be enlarged to include urban sections of the Interstate highway system as they are completed.

Cont.

The prime objective of the road life section during the biennium was to keep current records of the physical aspects and their changes on all state-interest roads. This involved the compilation of factual data on length, width, surface type, year of construction, improvement and retirement records, and cost studies.

## CARTOGRAPHY (Mapping)

The cartographic section maintains a continuing program of revision and updating of maps to meet current and future needs of the Department, the general public, and other map-using agencies. Because of the expanding and widespread use of visual communications, the cartographic section prepared a great deal of illustrative material of various types in addition to its prime function of mapping. Because of its experimentation and knowledge of methods and techniques of visual presentations, the cartographic section's unique talents and technical assistance were utilized to a great extent by other divisions of the Department, as well as other agencies of the State.

During this biennium the section acquired a cold type photo composing machine which prepares lettering of various sizes and styles. This gives the section the capability of "in-plant" type composition for use on maps and illustrative material.

The cartographic section published many types of maps and related material:

A State general highway base map published in 1964 and again revised in 1966

A detailed State general highway map published in 1964 and now in the process of revision

General highway maps for Washoe, Ormsby, Douglas, and Storey counties

A new series of seventeen 15-minute quadrangle maps which cover portions of these counties in greater detail, making a total of 27 map sheets

Cont.

Began revising maps on Lyon, Clark, and Pershing counties

Plotted control network for aerial photo mosaics

Produced:

State traffic report and traffic flow maps

Carson City urban boundary map

Las Vegas and North Las Vegas urban boundary map

Reno and Sparks urban boundary map

Maps for the Las Vegas and Truckee Meadows Urban Transportation studies

Illustrative material in color separation for the interim report of the Truckee Meadows Urban Transportation study

Display material including color slides and maps for presentation at a number of public hearings held in various parts of the State on proposed new highway construction

A State jurisdictional area map

Beautification cost study maps

Many types of reports and graphic work were done including maps for the control section book; maps for the sufficiency rating report; microwave relay maps; an air navigation chart for the flight operations section; construction schedule maps; scenic roads map; the out-of-state visitors survey report; the loadometer study; highway needs report; impost graphs and charts; movie sets for the training section; and many other types of charts, graphs, and maps for other divisions of the Department and for public relations purposes.

Cont.

The cartographic section continues to be in the forefront in developing new techniques in mapping and illustration work. Because of this unique position in keeping abreast of and devising new methods in drafting and related types of material, the section is called on by other divisions and other State agencies for advice and assistance in solving their problems.

The cartographic section has been instrumental in introducing new developments and methods which have materially increased the productivity of the Highway Department.

## TRAFFIC

Traffic data for the rural roads and city streets of the State continue to be an important statistical tool for the highway designer and the general public.

To continue the policy of making available current traffic statistics, forty-one sites are continuously counted at strategic locations throughout the State. These counting sites provide hourly, daily, and monthly traffic information for the relationships and expansion factors of other seasonal counts at over 1,700 locations on Nevada's state-interest road systems. These data are further supplemented by year-long traffic inventory of rural roads and city streets in the counties at an approximate 5-year interval. During the past biennium, Eureka, Lander, Lincoln, and Nye counties were updated, and a traffic inventory begun in Elko and White Pine counties.

Further utilization of Department computer equipment was accomplished to speed the output of statistical data and reduce the cost of traffic gathering.

Public hearings about proposed highway projects continued to be an important feature of the traffic section, with routings of Interstate, Primary, and Secondary highways and their traffic being discussed and explained to the public.

Traffic data were gathered and evaluated in conjunction with urban transportation studies presently in progress in Washoe and Clark counties.

Cont.

Annual reports of the section were the Annual Traffic Report with its recapitulations of traffic statistics on an annual daily basis, and the Tabulation of Annual Traffic Census, listing data for the month of July.

In addition, several short-time studies were accomplished for the potential justification of traffic signals, as well as many other specific traffic studies for various highway design proposals.

## ELECTRICAL ENGINEERING

The electrical engineer is directly responsible to the Chief Traffic Engineer. With the rapid growth of the State, increased traffic, and the development of the urban Interstate system, the need for more efficient traffic signal and highway lighting systems has become very significant. The electrical engineer is responsible for the design of these systems.

During the biennium approximately one-third of all highway contracts completed involved signalization or highway lighting. These varied from a simple, remote, intersection traffic signal to a complex, downtown, inter-connected series of intersections. In both highway lighting and traffic signal systems, the most up-to-date electronic and photometric equipment has been utilized, wherever practical. An equal or greater number of contracts are presently under construction or are being designed for future contracts.

## SPECIAL STUDIES

Increasing activity in new fields of research, while continuing work on carry-over projects active at the start of this biennium, highlighted the past two years for personnel of the special studies section.

Cont.

Field studies associated with Urban Transportation programs in the Truckee Meadows and Las Vegas Valley areas were completed and are being prepared for computor processing. Updating information on existing vehicle parking facilities and traffic accident data for the Truckee Meadows area, together with a report on each subject, are being done on an annual basis. This section continues to be involved in the many phases of updating and reviewing recommended street and highway planning programs resulting from the studies and discussions with other participating agencies in the program.

Considerable time and effort were spent on highway safety work. This included gathering traffic accident data, analyzing the information obtained therefrom, and preparing monthly summary reports. Data were also provided for justification of specific construction work qualifying as safety projects. Information is being provided on the "after" effects of safety improvements as required by the U. S. Bureau of Public Roads. A program of mutual cooperation between the Highway Department and other State agencies was initiated in the interest of increased highway safety. Work also continued on the Interstate Accident Study Test Section and reports on same were submitted to the U. S. Bureau of Public Roads. A procedure has been worked out for converting accident information to data processing codes for mass analysis, and it is anticipated that work will commence on a statewide accident study in the near future.

Completion of the 1963 Out-of-State Visitor Study was realized and copies of the published formal report have been distributed to all parts of the country to persons and organizations making requests.

Work continued on the study for improving or relocating U. S. 93 in the vicinity of Hoover Dam, and after discussions are held with appropriate officials, a report will be compiled and published.

The demand for data provided by this section including that required in the Interim Guide for Flexible Structures continued at a high level due to the use of this information in every proposed construction project.

Cont.

The section continues to be represented on the panel with other Highway staff members presenting the Department's views and findings to the public at formal public hearings.

Benefit-cost analysis was also computed for several route line selections.

Potential traffic use of several proposed routes from Lake Tahoe to east of the Sierras utilizing tunnels was computed and a feasibility report compiled.

Since the acquisition of a radar speed timer, many speed studies were conducted, the results of some being used to determine need for speed control areas. The remainder were analyzed to determine potential hazardous locations in the interest of accident prevention.

Annual studies were carried on as part of the normal routine. Updating 1963 tourist values provided current information on the subject and these data answered needs of many agencies and businesses which use this type of information.

## GEODETIC SECTION

During the current biennium the geodetic section was active in the following fields:

1. County Mapping

Complete map control and all traverses were supplied to the cartographic section for the following counties: Clark, Lyon, Pershing, Elko, and Ormsby, as well as complete control to define the size and shape of Pyramid Lake in Washoe county.

Cont.

2. Aerial Surveys

The following projects were undertaken and completed in conjunction with the photogrammetric section: final area counts were made on Aerial Survey contracts 17, 18, and 19; sheet checks and checks of secondary control were made on Aerial Survey contracts 21 and 22; and control layout for a semi-controlled mosaic in the Las Vegas area was completed and preliminary computations for Aerial Survey contract 25 control were begun.

3. Interstate Control

As various sections of Interstate 80 were completed in Churchill, Pershing, and Lander counties, these sections were coordinated with the U. S. Coast and Geodetic control along the route.

4. Location

For the benefit of the location division numerous ties of the location of the Kietzke Lane bypass of the North-South Freeway in Reno were completed, as well as numerous ties in the Lovelock area to facilitate stake out of the designed line, and an extension of existing control and traverse on U. S. 50 in the Lake Tahoe area.

5. Files

The file index system for all control was revamped utilizing rotary card file indices.

6. Statewide Microwave Study

A complete series of both vertical and horizontal stations were set in conjunction with the communications section to allow computation of feasibility of microwave paths for the proposed microwave links throughout the State.

7. Geodetic Programming

A new program to reduce the field notes for the Model 6 Geodimeter was successfully completed and the conversion of all geodetic programs from the 1620 to system 360 was begun.

Cont.

8. Miscellaneous Projects

Many short-term projects such as bearing checks, corner ties, and general traverse checking were executed by this section during this period.

9. General Planning Functions

A number of new programs and modifications of existing programs were completed by this section for the special studies, traffic, and road life sections.

10. Urban Transportation

The Truckee Meadows Urban Transportation study was completed through the preliminary phase of traffic tables and distribution of traffic on the street system. All models were adjusted and the future traffic and distribution is awaiting the future land use.

## PHOTOGRAMMETRY

During this biennium three aerial mapping contracts were let and completed, providing topographic maps for design and alternate route study on 22.6 miles of freeway alignment on Interstate Route 80 and U. S. Highway 395.

Two aerial mapping contracts were completed providing topographic maps for design of 25.2 miles of Secondary highway alignment in the Truckee Meadows area and 7.1 miles of freeway alignment on Interstate 80.

The section maintains a working file of the aerial photography obtained by the flight operations section, compiles and assembles aerial mosaics of said aerial photography for public hearings on proposed highway routings; right-of-way studies, court exhibits and parcel appraisals; and for preliminary route and drainage area studies.

Cont.

Requests for photogrammetric materials, i.e., copies of the topographic mapping, aerial photography and mosaics, are routed and filled through this section.

## FINANCIAL

Monthly publications during the biennium included tables and graphs on motor vehicle user revenues and vehicle registration, comparative calendar and fiscal year tables and graphs for previous years.

Reports were made on fiscal year financial operations of local governmental units below State level in connection with streets and allied street functions, such as street lighting, parking meters, storm sewers, and off-street parking. Included were debt service for all indicated types of functions and expenditures by all agencies providing funds for streets and roads.

## PLANNING DATA PROCESSING

This section was created in 1963 to coordinate all data processing activities among the various sections of the planning survey division and the data processing section, and it is responsible for converting applicable functions to the utilization of computing methods and equipment.

This section functions as a liaison between the two organizations so it can aid the various planning survey sections in adapting their requests or requirements to the most feasible methods possible on computing equipment; plans the procedures of reports; establishes the report layouts; devises proper data processing codes for the most effective use of data; installs methods of checks and balances to insure report accuracy; develops detailed systems analysis concerning the flow of work between the two operations produces, debugs, tests, and runs detailed computer programs and accompanying operating procedures; and is responsible for the rapid processing of all studies and reports using data processing.

Cont.

This section handles a wide variety of work such as monthly traffic reports submitted to the B. P. R., sufficiency studies, State mileage tables, city inventory, annual loadometer studies, tourist studies, origin-destination studies, urban transportation studies; etc.

This section now consists of the following personnel:

1 - Systems Analyst and Computer Programmer

1 - Computer Programmer

## FLIGHT OPERATIONS

Aerial reconnaissance in the Department of Highways continued to expand during the biennium.

Aerial photography taken by this section was used by the photogrammetry section to compile mosaics for public hearings. These mosaics continued to play a major role in portraying proposed routing and alignment with relation to property and terrain involved, and when displayed throughout the State were favorably accepted by the general public.

Many hundreds of aerial pictures were used by design for the purpose of studying alignment, drainage, and topography.

Location continued to use aerial photography in determining the most desirable routing for proposed highways.

Planning survey used numerous high altitude aerial photographs for map-making and for establishing current street patterns in widely scattered communities.

Right-of-way was a big user of aerial photography. In addition to the use of vertical photography in the study of controversial property evaluations, it is important to note that the right-of-way division has found an ever-increasing demand for aerial obliques. The oblique photographs were used in comdemnation suits and proved their value in court on many occasions.

Cont.

Public relations continued to use aerial photographs in informing the public of current construction projects, large structures, and completed four-lane highways.

During the biennium (1965) the Highway Department's Cessna 310 flew 417 hours and 40 minutes in transporting Nevada Highway Department personnel to and from various projects throughout the State. Over 83,400 miles-more than three and a half times the distance around the world-were covered, with a substantial savings in time and travel expense to Nevada's expanding highway program.

## URBAN TRANSPORTATION PLANNING

The Urban Transportation Planning study in the Truckee Meadows area which was started in 1964 has been continued. Data from an origin-destination survey, traffic surveys, and various economic studies have been used as a basis for projecting a transportation plan to the target year 1985. The development of the plan to be recommended to the governing agencies cooperating in the study will be completed late in the fall of 1966. The final report of the study should be published late in 1966 or early 1967.

Completion of the study has been delayed somewhat, partly because of problems associated with reconciling data from different sources and partly because of the need to use planning division personnel in the regular operations of that division. The study is being completed with regular personnel in the Department. While this has resulted in slower progress than might have been possible with consultants, it is still our opinion that the data now being accumulated and developed will be much more valuable in the continuing planning process.

Cont.

When the Truckee Meadows area study was first organized an application for financial assistance from the Housing and Home Finance Agency using Section 701 funds was submitted. There was considerable delay, largely because of unfamiliarity with the required procedures and the application was not approved until most of the field work had been completed. The final grant of federal funds was based on an estimated cost for remaining items of work totalling $56,500. The federal funds were two-thirds of this amount with matching one-third of the cost from State funds.

The second urban transportation study in the State was in the Las Vegas Valley and involved the cities of Las Vegas, North Las Vegas, and Henderson and Clark county. The joint agreement between the State and the local agencies for this study was dated January 5, 1965. The field work for the Origin-Destination Study was started in August 1965 and completed in April 1966. Data from the O-D survey are now being coded. Aside from the gathering of field data and preparing it for machine use only a small additional amount of work on this study has been done. Newer computer equipment has been obtained by the Department recently and this newer type of machine which will handle a greater volume of data will be used for the Las Vegas Valley study.

With the experience background obtained from the Truckee Meadows study it was possible to obtain approval of a Section 701 grant for the study prior to the beginning of the major part of the work. However, the grant was approved for only 50% of the total cost of the study. Again, for this 50% of the total cost the Department received two-thirds federal funds which required one-third matching with State funds. These one-third matching funds and the 50% of the cost not approved for the grant will come from State funds, plus an agreed amount to be furnished by the cities and county, which is approximately one-sixth of the study cost.

## ROAD DESIGN DIVISION

The design division in the Highway Department is responsible for the preparation of all plans, estimates and specifications for any and all construction, reconstruction and betterment projects let to contract. To accomplish the preparation of plans, estimates and specifications for any given project, it is necessary to coordinate with the functions of and the data received from other divisions within the Highway Department. This includes traffic data from the traffic section, material information from the materials and testing division, right-of-way from the right-of-way division, structure designs from the structural design division, construction procedures, controls and methods from the construction division. Special provisions and specifications are then developed for each project by the specification section.

In order to better prepare a complete design on any given project, the design division is organized to have a design section to handle each highway system; a section for the Interstate system, a section for the Primary and Secondary systems, a section for the Urban system, and a new section to handle all landscape projects. Each section is under the supervision of a competent design engineer who is responsible for the design of all projects assigned to that section. All design sections function under the supervision of the Chief Design Engineer.

During the biennium the division was able to develop personnel needed to fill all required positions at the designer level and above. However, there is still a problem in securing adequate personnel to fill the positions of engineering aide, map draftsmen, and assistant designers. This has been as area of high turnover due to low salaries and the youthfulness of the employees, many of whom have not yet selected their vocation or are trying to complete a college education or are faced with a military obligation. There were approximately 90 employees in the design division during the biennium, which is approximately the same number employed during the 1963-64 biennium.

Cont.

The design division is making more use of the data processing section in the calculations of earthwork, traverses, mass diagrams, etc. New computer equipment, programs, and a better understanding and knowledge of the processes and relationship between the designers and the data processing supervisors have resulted in excellent results and have eliminated a lot of the tedious calculations required to determine quantities, etc., by the conventional method of cross sections, planimeter readings, and end area computations. It is anticipated that more and better results will be obtained with experience and improved programs.

To assist design personnel in the preparation of uniform construction plans for all projects, a design manual has been compiled, setting forth geometric standards, policies, procedures, etc. This manual is being continually up-dated to keep design current and to comply with AASHO and Bureau of Public Roads policies and procedures which are being revised in an effort to standardize highway design throughout the 50 states.

During the 1965-66 biennium, the design division continued to make extensive use of aerial mosaic strip maps for design, public hearings, and general information for the public. An aerial photographic section has been developed in the Highway Department so that any required aerial mosaic strip maps can be secured in minimum time. Aerial maps are extremely valuable in determining drainage channels, frontage road requirements, and the relationship of a proposed highway to adjoining properties, topography, etc. Aerial contour maps also are used extensively in route studies, establishing final alignment, earthwork computations, drainage structures, and other design requirements.

A PERT program has been developed and is used by design. This program enables management and design supervisors to keep a project under design on schedule to meet predetermined construction advertising dates. The use of critical path planning enables all allied divisions to be alerted to the information and data required from their divisions, and the date such data is needed to complete a design on schedule for any given project. This results in a more orderly approach to the problem of securing and incorporating in design all of the required information necessary for completion so that construction schedules can be met.

Cont.

During the 1965-66 biennium, design was completed and contracts let on 12 Interstate projects, 15 Primary projects, 8 Secondary projects, 6 Urban projects, and 2 State projects at a total construction cost of $47,649,669.

Preliminary engineering expenditures for the projects listed above, and expenditures for design and engineering under way for future projects amounted to $5,091,355 during the biennium.

This includes $1,135,615 paid to consultants for surveys, design and the preparation of plans for Interstate construction through the urban sections of Reno-Sparks and Las Vegas-North Las Vegas, statewide aerial mapping, statewide foundation exploration and analysis, and other specialized investigations and reports.

## LOCATION

During the 1965-66 biennial period, location surveys were completed on 133 miles of State highway. Included in this total were the 78 miles of location accomplished by field crews, and the 55 miles by aerial mapping.

Among the major projects completed were: location of the Johnnie-Pahrump road; the Newmont Mine road; the relocation of U. S. 395 through Washoe Valley; and the location of a new route from U. S. 50 in Jakes Valley to the southern end of Ruby Valley. In addition, location crews did considerable line change work on Interstate 80, and center-lining on both Primary and Secondary highways throughout the State.

Two location crews were used full-time, and several construction survey crews on a part-time basis during the winter season.

As the biennium ended, work was underway on the relocation of U. S. 50 between Ely and Eureka.

## STRUCTURAL DESIGN DIVISION

During the past biennium there were 74 bridges and grade separation structures constructed or put under construction, including two bridge widenings and one curb raising. The estimated construction cost of these structures was $4,239,294 as compared to $8,478,971 the previous biennium. This reduction in expenditures was primarily due to: (1) the need for less structures, because most of the freeway work was in rural areas requiring fewer grade separations and interchanges; and (2) several projects that were delayed beyond the close of the biennial period due to last minute changes in structural design.

As of June 30, 1966, designs were complete on 87 bridges and grade separation structures which had not yet been placed under contract. This was a gain of 53 structure designs in excess of the 34 remaining at the end of the previous biennium.

The greatest number of structures were required on the Interstate system, with 49 on Interstate 80 and 15 on Interstate 15.

Interstate 80 still claims the longest structures, with two near Verdi, built during the last biennium, of about 1,000 feet, and two near Deeth, under construction during this biennium, of about 800 feet. The first tunnels to be designed and built by the State will be on Interstate 80 in Carlin Canyon. The design on these tunnels is well along, now. The bores, one for eastbound and one for westbound traffic, are parallel and approximately 1,500 feet long.

Interstate 15 is approaching completion. The design of the structures on the sections in Las Vegas and North Las Vegas from Charleston boulevard to Lamb boulevard are about 75 per cent complete, and the design on the last section at Mesquite has been started.

The Primary system had only one structure built on it during this last biennium. This was a special triple 12' x 10' reinforced concrete box on the Reese River on the relocation of U. S. 50 between Middlegate and Austin.

Cont.

The Secondary system had six structures built and two widenings on it during the last biennium. In Clark county there was one new bridge built on the Interstate 15 to Alamo Cutoff, and the widening of Bonanza underpass.

In Elko county two new bridges were placed under construction on the two branches of the Humboldt River on State Route 11 near Halleck.

In Lincoln county two new bridges were built on the Interstate 15 to Alamo Cutoff.

In Lyon county a new bridge was put in on the Carson River overflow, and the Carson River bridge was widened; both near Weeks.

During the previous biennium a foundation section was established in the division and an engineering geologist was hired to acquire and negotiate with responsible specialized consulting engineering firms which do foundation studies. He also works with them and checks their results on each job. Since this procedure has been followed a considerable savings in the cost of bridge foundations has been noticed. Foundation studies were made on 37 structure sites, or on 52 per cent of the structures built or put under construction during the biennium. These foundation studies were very seldom needed on reinforced concrete box type bridges.

More use of data processing for structure designs is being found as time progresses.

## HIGHWAY BEAUTIFICATION

On October 22, 1965, President Johnson signed into law the Highway Beautification Act. This act authorized money to be appropriated from the federal general fund for the three sections relating to phases of highway beautification. Section I covered control of outdoor advertising, Section II covered control of junkyards, and Section III provided funds for landscaping and scenic enhancement. Funds for the first two sections required matching on a 75% Federal, 25% State basis. For the third section the law provided for use of 100% federal funds.

Cont.

Congress appropriated only 50% of the money authorized, so the amount received by Nevada for billboard and junkyard control was quite limited. Most of the allocated funds were used in making a complete inventory of signs and junkyards along the Interstate and Primary routes. The Department was able to finance one project for screening a junkyard in Clark county. State laws for this purpose were not entirely adequate, but through the cooperation of the junkyard owner it was possible to obtain agreement for a satisfactory screening operation. New laws will be required if there is to be effective action on the billboard control.

Prior to the enactment of the 1965 law the State had employed a landscape architect and had reached a tentative agreement for three landscaping projects. Since the funds provided by the Beautification Act were from the federal general fund it was necessary that they be obligated prior to June 30, 1966, the end of the fiscal year. To accomplish this it was necessary that preparation of contract plans for the landscaping projects be expedited. A landscaping section was organized in the design division making use of experienced designers with some background relating to landscaping. The landscape architect also was assigned to this section.

With the fiscal year 1966 funds of approximately $364,000 it was possible to finance four landscaping projects and purchase one piece of property at Lake Tahoe under the scenic enhancement phase. The landscaping projects were at Hawthorne, Reno, Las Vegas, and Carson City.

It required considerable effort on the part of the newly organized landscaping section to complete the plans and get the projects under contract, but it was able to obligate all of the federal funds before the June 30 deadline. For fiscal year 1967 funds the Department plans on the construction of rest areas rather than using the money for landscaping or purchase of additional property. It is felt that the rest areas provide a service to which the public is entitled, and that in addition they are one of the greatest safety factors that can be added to State highways. Design of the areas which will make use of this year's funds is in progress.

# ARCHITECTURE

The architectural division in the Highway Department is responsible for preparing plans for the construction of Department owned buildings of many types. These include garage and repair shop structures, buildings for equipment storage, motor fuel dispensing facilities, dwellings, office buildings, water supply facilities, and sewage disposal systems.

In addition, a continuing program of repairs, remodeling, and updating of older buildings and facilities is being carried on.

This division also has been responsible for the design and construction of the safety rest areas on the highway system.

With the passage of legislation making federal participation available, a comprehensive program for construction of safety rest areas, scenic view sites and roadside beautification has been inaugurated.

Working closely with the road design division, the architectural division has been preparing standard designs for comfort stations, water supply and sewage disposal, lighting, parking, tables, shelters and related items.

During the biennium this division prepared plans and specifications for two major highway maintenance stations for construction in the immediate future. Plans also were prepared for six buildings designed as additions to existing stations.

Also during the period six small rest areas and two large rest areas were designed and constructed.

Plans were completed for three major rest areas and two scenic view sites on Interstate Highway 80 for construction during the upcoming biennial period.

The rapid expansion of the highway program is clearly reflected in the growth of the right-of-way division. There now are eighty-five employees stationed in Carson City, Sparks and Las Vegas. Various phases of property acquisition are performed by the several sections of the division which include: engineering, appraisal, appraisal review, negotiations, relocation assistance, and clerical.

This division is charged with the responsibility of acquiring all property and property rights necessary for the construction of highways, including access rights, maintenance station sites, material sites, radio tower sites, roadside recreation sites, and now, beautification and scenic easements.

Right-of-way personnel work closely with the location and design divisions during the initial study and design pf proposed projects in order to determine how they will affect the properties to be traversed. Determination of ownership, preparation of property maps, land descriptions, appraisal reports, agreements, deeds, and other legal documents are necessary before the right-of-way agent begins negotiations for the property. In most cases, negotiations are concluded to the satisfaction of the State and property owner. When agreement cannot be reached, the Right of Way Review Board recommends action by the legal division for possible condemnation action.

One of the newer services provided by the right-of-way division is relocation assistance, a program authorized by 1963 legislative action. Occupants of purchased properties are provided with all possible information and assistance in locating a new residence, farm, or business, as the case may be. Payments for moving costs are made to eligible persons or businesses.

Right-of-way acquisitions for the biennium have totaled 668 parcels of land containing 5,950 acres. This represents a total expenditure of $15,920,971 as compared to $8,094,892 expended during the previous biennium. Acquisitions of property for Interstate and Defense Highway Route 80 are continuing in the cities of Reno, Sparks, and Elko and will be undertaken soon in the cities of Lovelock, Winnemucca, Battle Mountain, and Carlin, as well as the remaining rural areas across the State. It is believed the acquisition of properties for Interstate 15 in Las Vegas and Clark county will be completed during the next biennium.

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Negotiations and other right-of-way activities in connection with a great many approved Primary, Secondary, and Urban projects will continue.

In order to assure full participation by the federal government in acquiring and administering rights-of-way, the division adheres to many State and federal laws and regulations. Through study, informational meetings, correspondence with other states, and seminars, every attempt is made to keep the employees abreast of current and improved practices in the fields of engineering and property acquisition.

The retention of qualified personnel, including those trained by the division, still poses a problem since other agencies and private enterprise continue to seek capable employees and at increased salaries.

## UTILITIES

The complexity of utility and railroad adjustments together with the establishment of new programs, has necessitated the creation of a separate utility division classified under the engineering series. Heretofore, some of the functions now being administered by this division were incorporated in the overall activity of the right-of-way division. The functions for which utilities has express responsibility are: utility-railroad adjustments and real property acquisitions from the utility and railroad companies, clearance and demolition, property management and disposal of surplus property and improvements, revocable permit processing and utility inspection, outdoor advertising and junkyard inventory and control, beautification coordination and studies, and division office engineering. Since the creation of this division which was effected on July 1, 1965, the division has expanded its operation to include field offices in Reno, Las Vegas, Winnemucca and Elko, and it currently employs 27 highly skilled personnel.

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State and federal laws provide for reimbursement to property holders for utility relocations when evidenced by a prior right of occupancy or when not covered by a State revocable permit. The cost of the relocation is considered reimbursable after deducting therefrom all increases in value of the relocated facility. This means that any betterment and increase in the useful service life of the relocated facilities must be borne by the company in order to insure that the taxpayers' dollars do not participate in any enhancement to the facilities belonging to a profit-making, private enterprise concern. The concept involved is that when a utility is forced to move its facilities to accommodate the public improvement, it is entitled to be left in the same relative position after the public improvement is accomplished as it enjoyed before. There is an obligation to make the utility "whole", no more, no less.

In order to insure strict compliance with all regulations and discharge Department responsibility to all segments of the taxpaying public, it is incumbent that control be maintained over a project from its inception to its conclusion and final payment.

In this respect, the utility division maintains construction inspection, assists in internal auditing, and carefully documents all aspects of the transaction to insure the full measure of federal participation.

During the biennium, utility and railroad adjustments amounted to approximately $1,500,000.00 relating to Interstate, Primary, and Secondary systems. The estimated budget of FY 1967 is set at $6,300,000.00, of which $4,800,000.00 is for land acquisition from the Southern Pacific and the Union Pacific railroads. The balance of $1,500,000.00 is budgeted for various utility adjustments throughout the State.

The division conducted and offered for sale improvements on 402 parcels for a total revenue of $111,106.81. Additional sale of maintenance sites totaled $58,425.00 for a grand total of $169,531.81.

In the Reno - Las Vegas areas, during the biennium, 52 demolition contracts were awarded to clear rights-of-way at a cost of $199,101.50.

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Since the separation of the utility and right-of-way operations, the utility division has continued to perform all property management functions, including leasing, protection of State-owned property, and compilation of a complete inventory of all acquired property.

It is the responsibility of this division to clear newly acquired right-of-way of all outdoor advertising structures prior to the letting of a particular project, thereby, allowing the contractor an unobstructed area in which to work.

This is accomplished by a sign survey during which each outdoor advertising structure is assigned a number, photographed, plotted on right-of-way or construction plans, and the size, type, and ownership noted.

The owner of each sign is then notified by letter of the necessity to relocate the affected structure. Certain stipulations are set forth, the compliance with which will allow the State of Nevada Department of Highways to make reimbursement for expenses incurred through the required relocation.

Upon receipt of the required documentation, along with verification from the utility inspector that the relocation has been completed, a request for warrant is forwarded to the accounting section from this office.

Due to prior experience with the various aspects of the outdoor advertising industry, it became this division's responsibility to conduct an inventory of all outdoor advertising structures and junkyards located along the State's Interstate and Primary systems as required by the Highway Beautification Act of 1965. This inventory, encompassing approximately 2,738 miles of roadway, contained 5,125 outdoor advertising signs and 50 junkyards.

In connection with the Highway Beautification Act of 1965, Title III, Section 302, at the request of the Secretary of Commerce through the Bureau of Public Roads, the utility division prepared and submitted an estimate of the cost of carrying out the provision of the Act, Titles I, outdoor advertising control, and II, control of junkyards.

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One hundred and twenty of the nonconforming outdoor advertising devices were appraised to establish a unit cost. The unit cost was multiplied by the total number of devices to establish a total cost of removal.

Five junkyards, adjacent to the Interstate and Primary systems, were appraised to establish a unit cost for removal. Cost of screening was estimated on eight junkyards. These appraisals and estimates were used to figure total cost of control of junkyards in the State of Nevada.

Due to the increasing number of railroad crossings necessitated by the entire highway program, great emphasis has been placed on coordination and negotiations with railroad companies throughout the State. Not only is more time being spent in this capacity by supervisors and members of the division, but, also, one man has been assigned to devote his full time to accomplish this function. The results have been simplified procedures, increased efficiency, and quicker results. An excellent example of what is being accomplished is the nine railroad crossings at a cost of approximately 1.75 million dollars, being presently negotiated with the Union Pacific railroad in the Las Vegas area. These structures, when complete, will provide six entirely new railroad crossings and eliminate three existing at-grade crossings. The Union Pacific, Clark county, North Las Vegas and Las Vegas are all involved in the negotiations and costs of these improvements.

The division is currently in the process of developing further fiscal control procedures to insure full federal participation. It is anticipated that there will be increased activities in all areas of endeavor as well as additional responsibility in the beautification and scenic enhancement areas. In recognition of the rapid expansion and the necessity for constant improvement, the division has embarked on a program of in-service and on-the-job training, as well as making use of specialized instruction.

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The legal division consists of a chief counsel and several assistant counsels, appointed by the Attorney General subject to the approval of the Board of Directors. Legal research assistants also are employed from time to time. The chief counsel is the administrative head of the legal division and is responsible for the efficient operation of this division. The division is responsible for all court action in acquiring property under the authority of Eminent Domain and also assists and advises the Highway Department in any and all other matters which need legal counsel. Inasmuch as the Highway Department is by far the largest agency in the State of Nevada, questions and problems are infinitely large in number. The chief counsel supervises the filing of all condemnation actions which are reviewed and signed by him and also reviews and signs all letters of offer made in connection with condemnation matters. The assistant counsels' duties are concerned mainly with trial proceedings along with the assistance of occasional fee attorneys who are appointed special deputy attorneys general. The chief counsel and the assistant counsels are called upon daily for consultation and advice from members of the right-of-way division and the utility division as well as other divisions of the Department.

There is only one highway legal office in the State of Nevada and it is located in Carson City. There are seventeen counties in the State covering an area of approximately 109,802 square miles. Unfortunately, many actual work days are lost by the attorneys traveling to and from the various counties where the motions or other pleadings are argued and the trials heard. Every effort is made to keep these trips to a minimum through use of special deputies, particularly in Las Vegas.

The legal division's time is largely utilized in the preparation and trial of condemnation actions to acquire property for highway purposes. There has been a substantial increase in the over-all volume during the last two years. Considerable effort has been made by the legal division to further negotiate and settle with the property owner after the matter has been referred for condemnation proceedings. And as a consequence, in settling the cases the Department thereby avoids the expense of a costly trial.

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The following chart sets forth the amount of litigation occurring during the period from July 1, 1964, through June 30, 1966:

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|---|---|
| Condemnation Cases filed: | 60 |
| Condemnation Cases pending as of June 30, 1966: | 55 |
| Condemnation Cases settled before trial proceedings began: | 43 |
| Condemnation Cases settled by trial: | 17 |

Legal division files all complaints required in connection with the acquisition of real property. Before a document is filed, it is reviewed, checked to see that all proper persons are made parties defendant and signed. The property description of all the property required also must be checked and inserted in the complaint. The complaint then is filed in the proper court and service of summons and complaint upon the parties effected. Since there is a great diversity in the names of the defendants, the access control to be taken, and the number of parcels involved, it is necessary that each complaint be handled on an individual basis. A written condemnation resolution is prepared wherein the Highway Board declares the necessity of the property involved for highway purposes.

The division recommends possible action in connection with proposals of settlement made by counsel for the landowner. It handles all correspondence in connection with condemnation cases and enters into such conferences as are required with the fee attorneys, appraisers and other interested parties in regard to the case at hand in addition to pre-trial conferences. This often requires many hours of time. It is necessary to take such action to avoid conflicting trial dates.

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Additionally, one of the attorneys in this division is a member of the Contractors' Claims Board and in that capacity participates in determination and recommendation of contractors' claims to the State Highway Engineer. In this connection, he attends conferences held with the other members of the Board, the resident engineer, and the contractor involved. All legal work required in the litigation of these contractors' claims is handled by this attorney.

Another member of the legal division handles all claims (approximately 150 per year) against persons found to have negligently damaged property belonging to the Highway Department. In this connection, he must prepare and file all legal acts necessary to protect the rights of the Department in these matters.

Also, the legal division processes claims for personal injury and property damage filed against the Department and defends it where suit is filed.

In addition to court trials handled, the legal division examines and approves the legality and form of contracts, agreements, Bureau of Public Roads project agreements, and resolutions executed by the Department (approximately 1100 per year) and also assists in the following:

Rendering opinions daily, both oral and written (approximately 250 per year); preparing contracts, resolutions and agreements with the cities, towns, counties, federal agencies, utility companies, independent contractors and other pertinent persons or companies as the need arises, as well as such legal forms as deeds, affidavits, easements, and other miscellaneous forms; and preparing bills for submission to the Nevada Legislature. Prospective legislation on beautification, billboard and junkyard control, has been prepared and will be submitted to the 1967 legislature.

This division works closely with the construction, design, bridge and right-of-way divisions of the Highway Department; as well as with outside agencies such as various cities and counties, the Indian Service, the Bureau of Public Roads, and various consulting engineers in both a service and advisory capacity.

In addition to its normal duties of coordination, acceptance, and control of the materials used in the design, construction, and maintenance of highways, this division is responsible for the final record sampling program instituted by the Bureau of Public Roads. This sampling program has expanded to the point that the full time of four men is required for this activity.

In the past, two men were able to sample subgrade material; now it is necessary to use three crews of two men each to perform this function. To provide more adequate coverage of the northern and southern portions of the State, the aggregate crews have been increased from two to four.

During the summer construction season the roadbed aggregates section has divided its time into two shifts, not only to handle the increased sample load, but to permit more complete utilization of facilities and equipment. Research has been done in this laboratory on the experimental use of the Cenco Moisture Balance. It has proven most satisfactory for quick results on the moisture content in Atterberg Limits with accuracy of one-half of one per cent in over 100 tests.

One man is employed as a full-time delineator to sketch material deposits, determine amounts of materials in deposits, and to maintain records of tests for the description of the materials site in the materials packet that accompanies the special provisions for each contract, in addition to functioning as Program Evaluation Research Technique coordinator for this division.

The increasing use of cement treated base has necessitated the training of field crews from the construction division as well as laboratory personnel for routine control and record sampling of the cement content and structural strength of these materials.

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Several employees have been assigned to the asphalt section to conduct extraction tests as a part of the record sampling program. These tests determine, from field samples, the percentage of asphalt used and the gradation of gravel in roadmix or plantmix materials used in paving operations.

The bituminous mix design section has enlarged its staff in order to determine the stability of mixtures, void factors, density, thickness, stripping and other factors concerned with the quality of paving materials. From these tests the design information for bituminous mixes is prepared. Also, the pavement on site is examined to determine structural strength, asphalt content, and degree of densification attained by the contractor. Extensive research has been done on the use of various additives.

The soils and foundation section has been equipped with apparatus to perform the following tests which previously had been omitted because of lack of personnel and equipment: unconfined compression, direct shear, triaxial shear with both constant and variable lateral pressure, consolidation and permeability. A test to evaluate the ability of aggregates to withstand wear from traffic, deterioration from oxidation, wetting, and drying has been developed. This test, known as a "Degradation Test" is being applied to Nevada aggregates. Research was done on a more rapid method for determining compaction suitability of the various roadbed components during the progress of construction by use of the Lane-Wells Road Logger.

The chemical section has been greatly expanded and modernized through the acquisition of a Beckman spectrophotometer and other instruments permitting the determination of certain elements in minutes rather than hours or days. The Leco Carbon and Sulfur Determinator for the rapid and accurate analysis of steel and other alloys has been acquired. Equipment has been installed to permit the evaluation of paints and related materials. At the request of the equipment division a comprehensive study was made comparing the performance of our present traffic paint with several other types of traffic paint. A new method has been developed by this section for the rapid determination of the cement content of cement treated base materials; it is being considered for adoption by the American Society for Testing and Materials and has been presented to the Highway Research Board.

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At the present time plans are underway to extend the testing loading dock to permit the rearrangement of instruments and make room for the necessary instruments for testing of welded material in conjunction with the Bureau of Public Roads program of expanded steel testing.

Considerable work has been done on the evaluation of lightweight concrete aggregates by the structural materials section.

Growth in this division is characterized by more complete and accurate control of the materials used in highway construction and beautification as well as an active and progressive research program.

Control has been the keynote of accomplishment in the construction division over the past biennium. With the increasing complexity of activity associated with the Interstate program, the problem of control of field operations became a major one over the past two years.

Under the direction of the Deputy Highway Engineer-Field, the construction division continued to supervise contract activity throughout the State. However, more emphasis was placed on project management at the district and resident engineering levels. More responsibility was placed with the district engineer for decisions affecting contract quality and progress.

As a further step toward improving control, personnel from the division rewrote and updated the Standard Specifications for construction, produced a new construction manual, a new concrete inspectors' manual, and completed a study on finishing concrete surfaces with recommendations for possible future changes in the Standard Specifications. Final draft of the standards was being prepared as the biennial period closed.

A contract claims board was established to review and approve all contract claims. The Construction Engineer was assigned to serve on that board, along with representatives from internal audit, testing, and legal.

Although the work load of the division remained at the same high level it was during the 1963-64 period, there was a reduction in personnel during the 1965-66 period. Only 13 worked in the division at the close of this past biennium compared to 27 at the close of the previous biennium. It is anticipated that an increase in qualified engineering personnel will be required to handle the workload facing the division during the upcoming biennial period.

Construction in 1965 and 1966 required 20 full-time field survey crews which were increased by seasonal help during peak summer activity. Assisting the field operation were special field testors assigned from the division and from district labs. The contract testing was greatly facilitated by the use of Department-owned field labs which were built from used commercial trailer bodies and furnished by the highway equipment division.

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Training, too, received attention during the biennium with field crews attending in-service schools for a variety of basic engineering subjects. Of equal benefit was the assignment of college engineering students to summer employment with the field crews. The student trainee system was developed as part of the coop program the Department established with the University of Nevada in providing graduate engineers for state highway service.

As the biennial period ended, division personnel were planning the standardization of field office procedures as a step toward improved control. A study also was underway to determine the feasibility of permanently assigning field survey crews to duty stations in each district.

During the biennium, district activity included the completion of 1,213 miles of new highway; 149 miles of Interstate, 1,016 of Primary, and 48 miles of Secondary roads. Construction costs for the period totaled nearly $51 million; $38 million on the Interstate routes, $10.2 million on the Primary routes, and $2.8 million on the Secondary routes.

In District One, 20 miles of Interstate roads and 22 miles of Secondary highways were completed at an overall cost of $9.8 million. Lighting installations were made along the Boulder Highway and Desert Inn road and the intersection of U. S. 91 and Dunes Flamingo road. Left turn storage lanes were constructed at crossovers along the Boulder Highway. U. S. 91 was widened to four lanes, and two drainage structures were lengthened. An overflow section was constructed on SR 52 just south of Pahrump. One new roadside rest area was built during the biennium on U. S. 93-95-466 (Boulder Highway) in Henderson.

In District Two, 63 miles of Interstate highways, 46 miles of Primary, and .5 miles of Secondary road work were completed in the biennium. The overall cost for the 110 miles was $21 million. Work was done on a new curb and gutter in Virginia City. A new maintenance station was built at Nixon, and a new garage was added at the Gardnerville maintenance station. A roadside rest area was built on U. S. 395 south of Carson City, and on U. S. 95A west of Yerington.

In District Three, 25 miles of Interstate, 10 miles of Primary, and 13 miles of Secondary highways were completed at an overall cost of $8.2 million. A new residence was installed at the Pequop maintenance station.

In District Four, 19 miles of Primary road work was done at a cost of $1 million. Slope and shoulder repairs were made on U. S. Alternate 50 near Ferguson Springs and in the Eureka area on U. S. 50. Curbs, gutters, and sidewalks were constructed in Panaca. The following rest areas were constructed: Schellbourne Station, north of Ely; Keystone, west of Ely; Pinto Summit, south of Eureka; on U. S. 50 west of Eureka; Ferguson Maintenance Station, south of Wendover; and Lake Valley Summit, south of Ely on U. S. 93.

Cont.

In District Five, 27 miles of Primary highways have been completed at a cost of $1 million. A new cold storage building and a loading ramp were built at Tonopah. An insulated garage and a new well were built at Carvers.

In District Six, 41 miles of Interstate roads, 13 miles of Primary roads, and 13 miles of Secondary roads were completed at an overall cost of $9.5 million. One roadside rest area was added during the biennium on U. S. 95, in the city limits of McDermit. Roadway shoulders, fill, and pavement were repaired N W of Lovelock on SR 48. Drainage facilities also were increased in this area. Shoulder damage on SR 8B north of Paradise Valley was repaired.

| District | Miles Maintained | Average Employed |
|---|---|---|
| One (Las Vegas) | 826 | 127* |
| Two (Reno) | 987 | 135 |
| Three (Elko) | 641 | 184* |
| Four (East Ely) | 846 | 88 |
| Five (Tonopah) | 855 | 66 |
| Six (Winnemucca) | 593 | 54 |

*Figures include R/W, Construction, and non-district personnel in district.

The Highway Department's beautification program has become one of the most important jobs handled by each district. In addition to maintaining the completed projects involved, district personnel have been directly involved in such beautification work as landscaping and roadside rest development.

# MAINTENANCE

During the 1965 fiscal year, maintenance costs increased 12.6% over 1964, and 1966 fiscal year increased 10.1% over 1965. The average overall cost per mile was $1355 in 1965, and $1492 per mile in 1966. Some 4,670 miles were maintained in 1965 and 4,779 in 1966.

In July and August of 1965 cloudbursts did major damage to U.S. 95 just north of Walker Lake and State Route 10 near the old Belleville mill site south of Mina. Debris and sediment were deposited on roadways, and minor shoulder washouts occurred in other areas. Near Clark Station in Truckee Canyon on I-80, SR 23 near Gabbs, SR 27 on Mt. Rose, and Alt. U.S. 50 on Whitehorse Pass south of Wendover, the damage was quite extensive. These cloudbursts increased the extraordinary repairs and maintenance from $49,499 in 1965 to $182,150 in the 1966 fiscal year.

Although snow removal declined 1.6% from $224,119 in 1965 to $220,579 in 1966, the sanding and salting costs jumped 62.4% from $78,628 in 1965 to $127,690 in 1966 due to the accelerated program of traffic services and safety. Cleanup amounted to $193,655 in 1965 and $215,212 in 1966. As more mileage has been constructed on Interstate divided highways the maintenance work volume has increased. The development of rest areas and roadside beautification and trash disposal by litter barrels have all involved increased maintenance. Under present planning for rest areas with complete facilities, maintenance will become a specialized matter and will require constant attention.

Additions and betterments became more extensive along with general maintenance on older roadways on the Primary and Secondary systems. In areas where commercial producers were available, a limited amount of plantmixed resurfacing was accomplished economically with very little inconvenience to traffic by contracted maintenance. A program was developed to provide $750,000 for contracted maintenance in the fiscal year of 1967. Placed in the planning and design stage were projects in Ormsby, Washoe, Eureka, and Clark counties where the work involved and the inconvenience to traffic during construction justified the award of contracts.

Cont.

Insulated, heated sand bins were installed at Incline on SR 27, Golconda Summit on Interstate 80, Halleck on Interstate 80, and Connor's Pass on U.S. 93, to provide material for spot sanding during critical conditions, as part of a continuing program to provide better traffic services.

In the area of safety, widening was done in conjunction with resurfacing projects accomplished by maintenance forces. Left turn storage lanes were provided in areas where needed, and lighting was provided at dangerous intersections. Guardrails were placed in small amounts to help eliminate traffic hazards.

The program of conducting meetings in districts for superintendents, supervisors, and foremen was continued. Meetings of the superintendents and shop foremen from all districts were conducted annually to improve communication and co-operation between the maintenance and equipment divisions.

A training program for maintenance personnel was begun in the fiscal year of 1965, and was accomplished by utilizing Department personnel from both the maintenance and equipment divisions in each district. The program was slow in getting under way because of opposition to taking competent operators away from their regular duties. Once it was started, the benefits and knowledge to be gained became apparent and the opposition faded away. Instruction in the use, care, and safe operation of equipment was the greatest factor in obtaining acceptance of the program. This was only a beginning, and served primarily to evaluate the present employees.

It is planned to continue the present program, and to place an instructor for equipment operation in the northern and southern areas of the State for individual training of prospects. The needs as outlined by the district engineers are heavy and the program is limited in scope, but it is a beginning. The indoctrination training and evaluation of ability will be continued for new employees to ascertain their present knowledge, capabilities, and potentialities.

Cont.

Maintenance costs and problems will continue on their upward trend due primarily to increased demands for traffic services from the public. Safety improvements are an additional cost, but can be justified if they prove their worth. The maintenance of beautification projects and rest areas represents an additional cost which is not in line with our present scope of activities and may swell the budget out of proportion.

# EQUIPMENT

During the 1965 - 66 biennium, the equipment division continued the policy of buying diesel powered equipment and, where feasable, increasing the size of the individual unit to effect a savings on cost per ton-mile for longer hauls. This practice resulted in substantial savings in both operating and repair costs. The fleet inventory remained at about the 1964 level of 1,650 units.

The budget for the fiscal year 1965 was $2,794,135.00 with 140 employees, and in 1966, was $2,636,860.00 with 146 employees.

When the division sign shop was moved into the new equipment complex late in the prior biennium, it was decided to upgrade and modernize the sign fabricating equipment. This has resulted in a more efficient operation which has been reflected in the 10% to 35% reduction of costs of manufacture of various standard stock signs. This shop has been assigned to manufacture all replacement highway signs used by the State.

During the biennium, the equipment division purchased used van trailers, remodeled them, and equipped them as field laboratories for use on construction contracts by field testing personnel. These units were completed at a total average cost of about $3200.00 each. Part of this cost has been and will be recovered in federal participation in rental rates.

The division senior auditor initiated a repair order system in the equipment division shops throughout the State. This system has resulted in more accurate records and increased federal participation.

The property inventory system has been revised and updated with use of property transfer forms and property record cards and a composite register of property item location supplied periodically by the data processing section.

# SERVICE AWARDS RECORD

## 45 YEARS

Armstrong, G. F.

## 40 YEARS

Rose, Dale V.

## 35 YEARS

Brown, Charles L.
Clyde, Victor W.
Harmer, Francis J.
Hays, D. H.
Kinne, A. G.
Little, L. W.

## 30 YEARS

Baxter, George M.
Bonafous, Joe
Carroll, Frank J.
Cochran, L. F.
Doty, Stanley P.
Harbin, Guy S.
Howard, A. A.
Koontz, Louis K.
McInnis, J. R.
Miles, Cyril D.
Ottini, Ralph J.
Walker, Oren W.

## 25 YEARS

Anderson, Ivan F.
Biggs, Bobby B.
Bradley, Ralph W.
Cutler, Royal H.
Gomes, Joseph V.
Joseph, Owen W.
Manchester, James
McDonald, Margaret
Pieretti, Eugene
Primeaux, Patrick
Rattazzi, Adele
Sanborn, Jack W.
Springer, Thorne E.

Cont.

## 20 YEARS

Brown, Norman L.
Brown, William H.
Buchanan, Morris B.
Clary, Arthur B.
Colletti, Michael
Cooney, Jack R.
Crosby, Donald J.
Dwyer, Thomas H.
Egoscue, Prudencio
Flournoy, John D.
Gregg, Lawrence W.
Hesse, Wallace
Hinrichs, Herbert
Horsley, Richard R.
Judnick, Jack
Mitchell, William
Morgan, J. H.
Nauman, John B.
Pattani, Jules
Phillipi, Walter R.
Reck, James R., Jr.
Roberts, Raymond H.
Robertson, William
Sharp, Robert
Shewan, William H.
Shirley, Jerome G.
Shoe, Genevieve
Stockwell, Ernest
Sullivan, James H.
Trussell, Raymond
Woolverton, Gerald
Young, Donald H.

## 15 YEARS

Arrizubieta, Pete
Barrett, Dwight H.
Bartels, Ernest W.
Bates, Sam R.
Bertelson, Theodore
Billings, Thomas B.
Davis, Allen A.
Dennison, Calvin H.
Eiche, Clarence S.
Evans, Tommie L.
Fletcher, Donald W.
Frank, Arthur J.
Gavazzi, Italo P.
Gerbatz, John F.
Green, Robert W.
Harmer, Charles E.
Kramer, Jesse J.
Mariluch, John P.
Mathiesen, Hardy C.
McKnight, Frank B.
Mighels, H. R.
Mills, Raymond H.
Morrison, Thomas C.
Parodi, Louis T.
Pomeroy, James E.
Reid, Jeff
Ritter, Frederick
Robison, Gordon D.
Ross, Bertram W.
Rubin, Paul
Saunders, Albert E.
Shea, George R.
Slansky, Jack
Summerfield, William
Van der Dussen, Herman
Whitehead, D. Wayne
Wilhoite, Charles C.

Allison, George V. (Disability)
Armstrong, G. F.
Armstrong, Homer F. (Disability)
Betts, Horace
Boardman, Edgar T.
Cazier, Albert J.
Chidwick, Cyril F.
Clock, Frank E.
Cochran, L. F.
Crocker, Percy
Dennison, Calvin H.
Denton, Aubrey W.
Depp, Nola
Dwyer, Thomas H.
Evans, Joe
Everett, Donald
Foley, John D.
Gerbatz, John F.
Giraud, Joseph J.
Glock, A. Martin
Gobeli, Fred
Grier, George P.
Groesbeck, Burt J.
Hinds, Charles W.
Hitchings, Lester C.
Ingram, George S.
Inks, Virgil L.
Jolley, Donal J.
Kleinman, L. H.
Leavitt, Vincen E.
Manchester, James
Mandel, Lawrence
Marlia, Matteo
Masini, Mario
McKnight, Frank B.
Metzger, Harry M.
Mighels, Henry R.
Morgan, J. H.
Morganroth, DeClare
Murdock, Alice G.
Naef, Frank L.
Norregaard, John
Offen, Elmer B.
Parker, Robert B.
Pears, Laverne
Pringle, Marjorie
Pruett, Reubel L.
Reading, Arthur B.
Ream, Mary L.
Reed, Chester H.
Reichenback, Otto
Reppert, Myrtle A.
Robertson, William G.
Roseberry, Elmer A.
Schultz, Marion I.
Shirley, Jerome
Smith, George A.
Steele, Joseph W.
Theodoloz, Marcel
Trussell, Raymond
Veith, George L.
Waite, Marvin H.
Whittemore, Robert G.
Wooden, Chester L.
Wright, W. O.
Zilkey, Willard O.

(July 1964 to July 1966)

DECEASED

Allison, George V. (Disability)
Angus, Kenneth W.
Billings, Thomas
Crampton, P. H.
Cross, Ernest C.
Cruz, Andrew E.
Cutler, Royal
DuFresne, John
Geyer, Chester E.
Hamm, Robert J.
Marchand, Leo F.
McBride, Charles N.
McElroy, Theodore
Mello, Jack
Munson, Warren
Osborne, G. C.
Pew, Leslie A.
Reno, Lawrence
Schade, Jack
Vidovich, Buddy M.
Whittemore, Robert G.
Wilhoite, Charles

(July 1964 to July 1966)

AVERAGE NUMBER HIGHWAY DEPARTMENT EMPLOYEES BY DIVISION AND YEAR

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | Net Change |
|---|---|---|---|---|---|---|---|
| CONSTRUCTION & MAINTENANCE | (733) | (791) | (919) | (1097) | (983) | (942) | (+214) |
| Maintenance | 386 | 377 | 375 | 395 | 396 | 398 | + 12 |
| Equipment | 96 | 119 | 126 | 137 | 137 | 137 | + 41 |
| Construction | 205 | 250 | 365 | 511 | 391 | 344 | +139 |
| Materials & Testing | 25 | 23 | 34 | 39 | 43 | 47 | + 22 |
| Location | 21 | 22 | 19 | 15 | 16 | 16 | - 5 |
| PLANNING & DESIGN | (203) | (235) | (256) | (292) | (313) | (330) | (+127) |
| Road Design | 82 | 102 | 108 | 112 | 105 | 102 | + 20 |
| Bridge Design | 11 | 11 | 11 | 15 | 16 | 18 | + 7 |
| Right of Way & Utilities | 38 | 50 | 56 | 82 | 103 | 112 | + 74 |
| Legal | 6 | 4 | 7 | 7 | 9 | 12 | + 6 |
| Planning | 66 | 68 | 74 | 76 | 80 | 86 | + 20 |
| ADMINISTRATIVE SERVICES | ( 77) | ( 78) | ( 89) | ( 99) | (121) | (129) | (+ 52) |
| Accounting & Audit | 12 | 13 | 17 | 18 | 22 | 25 | + 13 |
| Data Processing | 16 | 15 | 18 | 20 | 19 | 18 | + 2 |
| Office Engineer | 4 | 4 | 6 | 7 | 7 | 7 | + 3 |
| Stores, Mail & Files, Custodial | 25 | 23 | 25 | 23 | 26 | 28 | + 3 |
| Personnel & Training | 3 | 4 | 4 | 5 | 8 | 9 | + 6 |
| Public Information | 4 | 4 | 4 | 3 | 6 | 7 | + 3 |
| Magazine | - | - | - | 5 | 8 | 8 | + 8 |
| Others | 13 | 15 | 15 | 18 | 25 | 27 | + 14 |
| Totals | 1013 | 1108 | 1264 | 1489 | 1417 | 1401 | +393 |

TABLE 1
CONSTRUCTION AND RECONSTRUCTION COMPLETED AND UNDER CONTRACT ON THE DESIGNATED STATE HIGHWAY SYSTEM AT THE CLOSE OF THE BIENNIUM

| Type | Miles new construction completed during biennium | Miles reconstruction completed during biennium | Miles new construction under contract at close of biennium | Miles reconstruction under contract at close of biennium | Totals |
|---|---|---|---|---|---|
| Grading | 85.963 | --- | --- | --- | 85.963 |
| Roadmix | 21.124 | --- | --- | --- | 21.124 |
| Plantmix | 196.915 | 115.009 | 145.980 | 80.232 | 538.136 |
| TOTALS | 304.002 | 115.009 | 145.980 | 80.232 | 645.223 |

TABLE 2

Table Showing Status of Mileage on the Various "State Interest" Highway Systems in Nevada

as of July 1, 1966

| County | Improved by State Highway Department: Federal-aid Primary System | Federal-aid Secondary System | Remaining State Highway System | Total | *State Interest Roads Not Improved by State | Grand Total All Types and All Systems |
|---|---|---|---|---|---|---|
| Churchill | 149.7 | 119.0 | 16.6 | 285.3 | 22.6 | 307.9 |
| Clark | 267.6 | 292.7 | 19.8 | 580.1 | 254.4 | 834.5 |
| Douglas | 48.9 | 43.6 | - | 92.5 | 16.5 | 109.0 |
| Elko | 330.6 | 278.5 | 14.7 | 623.8 | 239.0 | 862.8 |
| Esmeralda | 115.3 | 106.0 | 20.9 | 242.2 | 15.1 | 257.3 |
| Eureka | 73.2 | 105.7 | - | 178.9 | 127.6 | 306.5 |
| Humboldt | 135.1 | 174.4 | - | 309.5 | 200.5 | 510.0 |
| Lander | 61.7 | 124.0 | 42.2 | 227.9 | 124.4 | 352.3 |
| Lincoln | 99.5 | 201.1 | - | 300.6 | 100.1 | 400.7 |
| Lyon | 125.3 | 108.3 | - | 233.6 | 87.2 | 320.8 |
| Mineral | 119.1 | 85.3 | 0.1 | 204.5 | 72.0 | 276.5 |
| Nye | 240.4 | 261.4 | 4.3 | 506.1 | 311.4 | 817.5 |
| Ormsby | 20.6 | 19.2 | - | 39.8 | 0.7 | 40.5 |
| Pershing | 75.0 | 97.1 | - | 172.1 | 129.1 | 301.2 |
| Storey | 0.8 | 12.1 | - | 12.9 | 23.1 | 36.0 |
| Washoe | 76.2 | 198.3 | 7.9 | 282.4 | 329.5 | 611.9 |
| White Pine | 264.8 | 160.9 | - | 425.7 | 189.8 | 615.5 |
| Totals | 2,203.8 | 2,387.6 | 126.5 | 4,717.9 | 2,243.0 | 6,960.9 |

| Type | Mileage by Surface Types and Systems as of December 31, 1965 | | | | | |
|---|---|---|---|---|---|---|
| A-B Primitive and Unimproved | - | - | - | - | 517.9 | 517.9 |
| C Graded and Drained | - | - | - | - | 78.0 | 78.0 |
| D-E Soil-Surfaced and Gravel or Crushed Stone | 16.5 | 59.1 | 20.6 | 96.2 | 1,463.5 | 1,559.7 |
| F Bituminous Surface Tr. | - | 5.0 | 3.6 | 8.6 | 7.0 | 15.6 |
| G Roadmix or Plantmix Surface | 2,145.8 | 2,316.4 | 102.2 | 4,564.4 | 175.9 | 4,740.3 |
| H-I High Type Bituminous | 41.2 | 6.7 | 0.1 | 48.0 | 0.7 | 48.7 |
| J Portland Cement Concrete | 0.3 | 0.4 | - | 0.7 | - | 0.7 |
| Total | 2,203.8 | 2,387.6 | 126.5 | 4,717.9 | 2,243.0 | 6,960.9 |

* State-Interest Roads are all routes on the State designated System or Federal-aid System.

# TABLE 3

## COMPARISON OF AVERAGE DAILY TRAFFIC AT AUTOMATIC RECORDERS FOR TEN FISCAL-YEAR PERIODS

| | | DAILY AVERAGE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1956-1957 | 1957-1958 | 1958-1959 | 1959-1960 | 1960-1961 | 1961-1962 | 1962-1963 | 1963-1964 | 1964-1965 | 1965-1966 |
| 013110 | Sheckler Lane (S.R. 61) S.W. of Fallon | - | - | - | - | - | - | - | 662 | 647 | 724 |
| 102A | U.S. 91 and 466, S. of Las Vegas | 6,200 | 5,678 | 6,340 | 6,566 | 6,959 | - | - | - | - | - |
| 031115 | Interstate 15, South of Jean | - | - | - | - | - | 6,586 | 6,898 | 6,872 | 7,134 | 7,562 |
| 120 | U.S. 91 and 93, N. of Nellis A.F.B. | 2,806 | 3,007 | 2,943 | 3,932 | 3,320 | 3,496 | - | - | - | - |
| 031125 | Interstate 15, S.W. of Glendale | - | - | - | - | - | - | 3,284 | 3,517 | 3,919 | 3,787 |
| 032115 | U.S. 93, 95 and 466, S.E. of Las Vegas | 10,520 | 10,213 | 10,516 | 11,362 | 12,135 | 13,859 | 19,360 | 21,278 | 22,060 | 22,398 |
| 032125 | U.S. 95, N.W. of Las Vegas | 1,907 | 1,743 | 1,787 | 1,682 | 1,846 | 3,476 | 3,770 | 4,261 | 4,595 | 4,832 |
| 032130 | U.S. 95, S. of Railroad Pass | - | - | - | - | - | - | - | 814 | 943 | 891 |
| 032215 | Las Vegas Blvd., S. of Charleston Blvd., in Las Vegas | - | - | - | - | - | - | - | 28,488 | 28,255 | 26,986 |
| 033110 | S.R. 12, N. of Logandale | 580 | 618 | 610 | 648 | 682 | 643 | 782 | 783 | 872 | 796 |
| 033120 | Sunset Rd., S. of McCarran Field, Las Vegas | - | - | - | - | - | - | - | 1,612 | 1,852 | 1,992 |
| 035215 | Charleston Blvd., W. of Rancho Rd., in Las Vegas | - | - | - | - | - | - | - | 19,360 | 17,471 | 16,468 |
| 037130 | S.R. 41, N.E. of Henderson | - | - | - | - | - | - | - | 1,346 | 1,156 | 1,363 |
| 107 | U.S. 40, just east of Elko | 2,632 | 2,670 | 2,812 | - | - | - | - | - | - | - |
| 071110 | U.S. 40, East of Elko | - | - | - | 2,188 | 2,496 | 2,583 | 2,898 | 3,150 | 3,516 | 3,643 |
| 071120 | U.S. 40, East of Wells | 1,767 | 1,763 | 1,775 | 1,779 | 1,909 | 1,874 | 1,875 | 2,020 | 2,267 | 2,482 |
| 072110 | U.S. 93, South of Contact | - | - | - | - | - | - | - | 796 | 837 | 912 |
| 103 | S.R. 46, just South of Elko | 789 | 823 | 844 | - | - | - | - | - | - | - |
| 073110 | S.R. 46, S.E. of Elko | - | - | - | 346 | 361 | 354 | 423 | 419 | 546 | 525 |
| 092110 | U.S. 6 and 95, 5.4 mi. N.W. of Nye-Esmeralda County line | - | - | - | - | - | - | - | - | - | 1,019 |
| 131115 | Interstate 80, East of Golconda Interchange | - | - | - | - | - | - | - | - | 2,695 | 2,865 |
| 132110 | U.S. 95, South of Orovada | - | - | - | - | - | - | - | 642 | 675 | 720 |
| 132310 | U.S. 40, in Winnemucca | - | - | - | - | - | - | - | 7,344 | 8,001 | 7,742 |
| 133110 | S.R. 8a, West of U.S. 95, South of Orovada | - | - | - | - | - | - | - | 113 | 121 | 130 |
| 151110 | U.S. 40, West of Battle Mountain | 1,808 | 1,859 | 1,866 | 2,055 | 2,123 | 2,118 | 2,325 | 2,581 | - | - |
| 152110 | U.S. 50, West of Austin | 290 | 275 | 288 | 300 | 308 | 329 | 366 | 344 | 357 | 343 |
| 172110 | U.S. 93, South of S.R. 25 | - | - | - | - | - | - | - | 614 | 651 | 646 |
| 193110 | S.R. 3, South of Yerington | 949 | 644 | 645 | 503 | 471 | 456 | 544 | 573 | 564 | 584 |
| 232110 | U.S. 6 and 95, West of Tonopah | 912 | 916 | 969 | 1,093 | 1,057 | 1,162 | 1,363 | 1,577 | 1,568 | - |
| 233110 | S.R. 8a, North of U.S. 6 | - | - | - | - | - | - | - | 191 | 218 | 255 |
| 233120 | S.R. 58, S.W. of Beatty | - | - | - | - | - | - | - | 238 | 275 | 297 |
| 252115 | U.S. 395, North of Carson City | 3,283 | 3,584 | 3,929 | 4,206 | 4,433 | 4,743 | 5,161 | 5,490 | 6,343 | 7,262 |
| 252125 | U.S. 50, West of U.S. 395, South of Carson City | 2,338 | 2,495 | 3,110 | 3,439 | 3,287 | 3,465 | 3,790 | 4,019 | 4,342 | 4,969 |
| 271115 | Interstate 80, N.E. of Lovelock | 2,119 | 2,228 | 2,284 | 2,462 | 2,575 | 2,701 | 2,618 | 2,727 | 2,987 | 3,347 |
| 273110 | S.R. 59, South of Lovelock | 303 | 303 | 321 | 300 | 284 | 305 | 351 | 354 | 406 | 432 |
| 311115 | Interstate 80, East of Sparks | 4,723 | 4,940 | 5,045 | 5,156 | 5,259 | 5,421 | 6,134 | 6,289 | 7,261 | 7,701 |
| 311125 | Interstate 80, S.W. of Verdi | 3,909 | 3,903 | 4,324 | 5,186 | 5,394 | 6,024 | 6,352 | 6,727 | 7,791 | 8,817 |
| 312110 | U.S. 395, North of Reno | - | - | - | - | - | - | - | 2,589 | 2,594 | 3,032 |
| 312215 | Kietzke Lane, in Reno | - | - | - | - | - | - | 13,837 | 15,102 | 17,562 | 18,078 |
| 312225 | U.S. 40 (East Fourth St.), in Sparks | - | - | - | - | - | - | 17,681 | 17,608 | 17,112 | 18,515 |
| 313120 | Huffaker Lane, W. of U.S. 395, South of Reno | - | - | - | - | - | - | - | 330 | 340 | 384 |
| 313130 | S.R. 34, South of Gerlach | - | - | - | - | - | - | 296 | 326 | 316 | 330 |
| 313215 | Oddie Boulevard, in Sparks | - | - | - | - | - | - | 5,213 | 6,007 | 7,087 | 7,136 |
| 317110 | S.R. 27, West of U.S. 395, South of Reno | 1,011 | 1,238 | 1,135 | 1,120 | 1,439 | 1,519 | 1,676 | 1,704 | 1,878 | 2,150 |
| 332110 | U.S. 50 Alt. and 93, North of McGill | 798 | 744 | 652 | 685 | 740 | 710 | 827 | 840 | 797 | 794 |
| 109 | U.S. 6 and 93, South of East Ely | 1,073 | 1,023 | 930 | - | - | - | - | - | - | - |
| 332120 | U.S. 6, 50 and 93, South of Ely | - | - | - | 539 | 558 | 574 | 632 | 636 | 662 | 668 |
| 333110 | S.R. 38, South of U.S. 6, North of Preston | - | - | - | - | - | - | - | - | - | 143 |

TABLE 4

BRIDGES AND GRADE SEPARATION SUMMARY

Number of Structures Built by State Highway

| SUMMARY BY TYPE | CONSTRUCTED OR UNDER CONSTRUCTION AS OF JUNE 30,1964 | CONSTRUCTED DURING BIENNIUM OR UNDER CONSTRUCTION JUNE 30, 1966 | STRUCTURES ABANDONED DURING BIENNIUM | TOTAL AS OF JUNE 30, 1966 | STRUCTURES ON HIGHWAY SYSTEM NOT BUILT BY STATE HIGHWAY DEPARTMENT | TOTAL STRUCTURES AS OF JUNE 30, 1966 |
|---|---|---|---|---|---|---|
| Plain Concrete | 4 | 0 | 0 | 4 | 1 | 5 |
| Reinforced concrete | 406 | 67 | 0 | 473 | 1 | 474 |
| Structural steel | 42 | 0 | 0 | 42 | 12 | 54 |
| Timber | 27 | 0 | 0 | 27 | 1 | 28 |
| Composite structures (Reinforced concrete and Structural steel) | 11 | 2 | 0 | 13 | 0 | 13 |
| Prestressed concrete | 25 | 2 | 0 | 27 | 0 | 27 |
| Structural plate pipe | 2 | 0 | 0 | 2 | 0 | 2 |
| TOTAL | 517 | 71 | 0 | 588 | 15 | 603 |
| Total length of structures in feet | 48,579 | 6055.51 | 0 | 54,636.51 | 1,589 | 56,225.51 |
| Average length of bridge in feet | 94 | 85 | 0 | 93 | 106 | 93 |
| SUMMARY BY PURPOSE | | | | | | |
| Bridges over waterways | 322 | 36 | 0 | 358 | 11 | 369 |
| Railroad grade separation | 52 | 2 | 0 | 54 | 4 | 58 |
| Interchange structures | 103 | 19 | 0 | 122 | 0 | 122 |
| Highway grade separation | 40 | 14 | 0 | 54 | 0 | 54 |
| TOTAL | 517 | 71 | 0 | 588 | 15 | 603 |

TABLE 5

NUMBER AND TYPE OF STRUCTURE BY COUNTY

As of June 30, 1966

| COUNTY | BRIDGES OVER WATERWAYS | RAILROAD GRADE SEPARATION STRUCTURES | INTERCHANGE STRUCTURES | HIGHWAY GRADE SEPARATION STRUCTURES | TOTAL |
|---|---|---|---|---|---|
| Churchill | 37 | 0 | 6 | 2 | 45 |
| Clark | 125 | 21 | 41 | 16 | 203 |
| Douglas | 20 | 0 | 0 | 0 | 20 |
| Elko | 53 | 10 | 15 | 10 | 88 |
| Esmeralda | 2 | 0 | 0 | 0 | 2 |
| Eureka | 13 | 6 | 4 | 2 | 25 |
| Humboldt | 12 | 3 | 15 | 6 | 36 |
| Lander | 9 | 0 | 2 | 4 | 15 |
| Lincoln | 13 | 2 | 0 | 0 | 15 |
| Lyon | 18 | 4 | 4 | 4 | 30 |
| Mineral | 4 | 0 | 0 | 0 | 4 |
| Nye | 15 | 0 | 2 | 0 | 17 |
| Ormsby | 0 | 0 | 0 | 0 | 0 |
| Pershing | 11 | 1 | 8 | 4 | 24 |
| Storey | 0 | 1 | 0 | 0 | 1 |
| Washoe | 34 | 6 | 25 | 6 | 71 |
| White Pine | 3 | 4 | 0 | 0 | 7 |
| TOTAL | 369 | 58 | 122 | 54 | 603 |

TABLE 6

MATERIALS AND TESTING DIVISION

During the 1965-1966 Biennium the Materials and Testing Division performed 141,509 individual tests on 25,178 separate samples. In addition, the preliminary roadbed design has been completed for twelve Interstate and Urban Projects, as well as fifteen Primary and Secondary Road Projects.

| Material Tested | Number of Samples 1965 | 1966 | Total | Number of Tests Each Sample | Total |
|---|---|---|---|---|---|
| I. Chemical and Metallurgical Laboratory | | | | | |
| Fence Posts, Wood | 22 | 20 | 42 | 4 | 168 |
| Fence Posts, Metal | 19 | 11 | 30 | 5 | 150 |
| CMP | 234 | 2062 | 2296 | 4 | 9184 |
| Moisture, Soil | 10 | - | 10 | 1 | 10 |
| Barbed Wire | 10 | 16 | 26 | 4 | 104 |
| Farm Fence | 3 | 7 | 10 | 4 | 40 |
| Conduit & EMT | 32 | 32 | 64 | 2 | 128 |
| Tape, Electrical | 9 | 7 | 16 | 2 | 32 |
| Timber, Burial | 2 | 2 | 4 | 2 | 8 |
| Galv. Steel Chairs | 3 | - | 3 | 2 | 6 |
| Right of Way Markers | 1 | - | 1 | 4 | 4 |
| Target Plates | 7 | 8 | 15 | 3 | 45 |
| Guide Posts | 9 | 4 | 13 | 5 | 65 |
| Paint | 11 | 37 | 48 | 8 | 384 |
| Chain Link Fence | 11 | 1 | 12 | 3 | 36 |
| Water Pipe | 6 | 27 | 33 | 4 | 132 |
| Steel, Structural | 39 | 20 | 59 | 5 | 295 |
| Steel, Rebars | 343 | 209 | 552 | 2 | 1104 |
| Cement | 116 | 182 | 298 | 10 | 2980 |
| Wire, Electrical | 24 | 143 | 167 | 2 | 334 |
| Textiles | 2 | 4 | 6 | 4 | 24 |
| Water | 5 | 16 | 21 | 8 | 168 |
| Lime | 5 | - | 5 | 3 | 15 |
| Soil Analyses | - | 41 | 41 | 18 | 738 |
| Bin Wall Materials | - | 6 | 6 | 8 | 48 |
| Traffic Paint Evaluation | - | 6 | 6 | 24 | 144 |
| CTB, Design | 125 | 31 | 156 | 30 | 4680 |
| CTB, Contract | 18 | 62 | 80 | 20 | 1600 |
| Subtotals | | | 4,020 | | 22,626 |

TABLE 7

MATERIALS AND TESTING DIVISION

| Material Tested | Number of Samples 1965 | 1966 | Total | Number of Tests Each Sample | Total |
|---|---|---|---|---|---|
| II. Roadbed Aggregates Section | | | | | |
| Preliminary Pit Samples | 1019 | 804 | 1823 | 7 | 12761 |
| Borrow | 569 | 330 | 899 | 6 | 5394 |
| Finished Products | - | 30 | 30 | 5 | 150 |
| State & BPR Record Samples | 1057 | 415 | 1472 | 5 | 7360 |
| Open Graded Plantmix | 10 | 21 | 31 | 4 | 124 |
| Plantmix Aggregate | 46 | 39 | 85 | 6 | 510 |
| Roadmix Aggregate | 18 | 10 | 28 | 6 | 168 |
| Screenings | 11 | 12 | 23 | 5 | 115 |
| Blending Material | 11 | 4 | 15 | 5 | 75 |
| Blotter & Cover Material | 10 | 1 | 11 | 4 | 44 |
| Maintenance Material | 6 | 9 | 15 | 6 | 90 |
| CTB (Field) | 9 | 23 | 32 | 5 | 160 |
| Foundation Fill | 2 | - | 2 | 4 | 8 |
| Backfill | 2 | 5 | 7 | 4 | 28 |
| Special Tests | 65 | 2 | 67 | 5 | 335 |
| Subgrade Samples | 924 | 1352 | 2276 | 5 | 11380 |
| Preliminary Preparation "R" Values | 161 | 191 | 352 | 6 | 2112 |
| Three-Way Audit Samples | 3 | 25 | 28 | 5 | 140 |
| Subtotals | | | 7,196 | | 40,954 |
| III. Structural Materials Section | | | | | |
| Portland Cement | 120 | 192 | 312 | 5 | 1560 |
| Coarse Aggregate | 157 | 154 | 311 | 8 | 2488 |
| Fine Aggregate | 109 | 100 | 209 | 10 | 2090 |
| Concrete Cylinders | 1760 | 1958 | 3718 | 1 | 3718 |
| Building Blocks | 10 | 11 | 21 | 4 | 84 |
| Building Bricks | 0 | 6 | 6 | 2 | 12 |
| Concrete Pipe | 0 | 17 | 17 | 2 | 34 |
| Rip Rap Stone | 19 | 15 | 34 | 1 | 34 |
| Water for Concrete | 1 | 7 | 8 | 2 | 16 |
| Reinforcing Steel | 506 | 273 | 779 | 4 | 3116 |
| Concrete Cores | 10 | 12 | 22 | 1 | 22 |
| Chair (Re-Bar Spacers) | 0 | 58 | 58 | 1 | 58 |
| Mortar Sand | 1 | 1 | 2 | 9 | 18 |
| Concrete Beams | 0 | 36 | 36 | 1 | 36 |
| Subtotals | | | 5,533 | | 13,286 |

TABLE 8

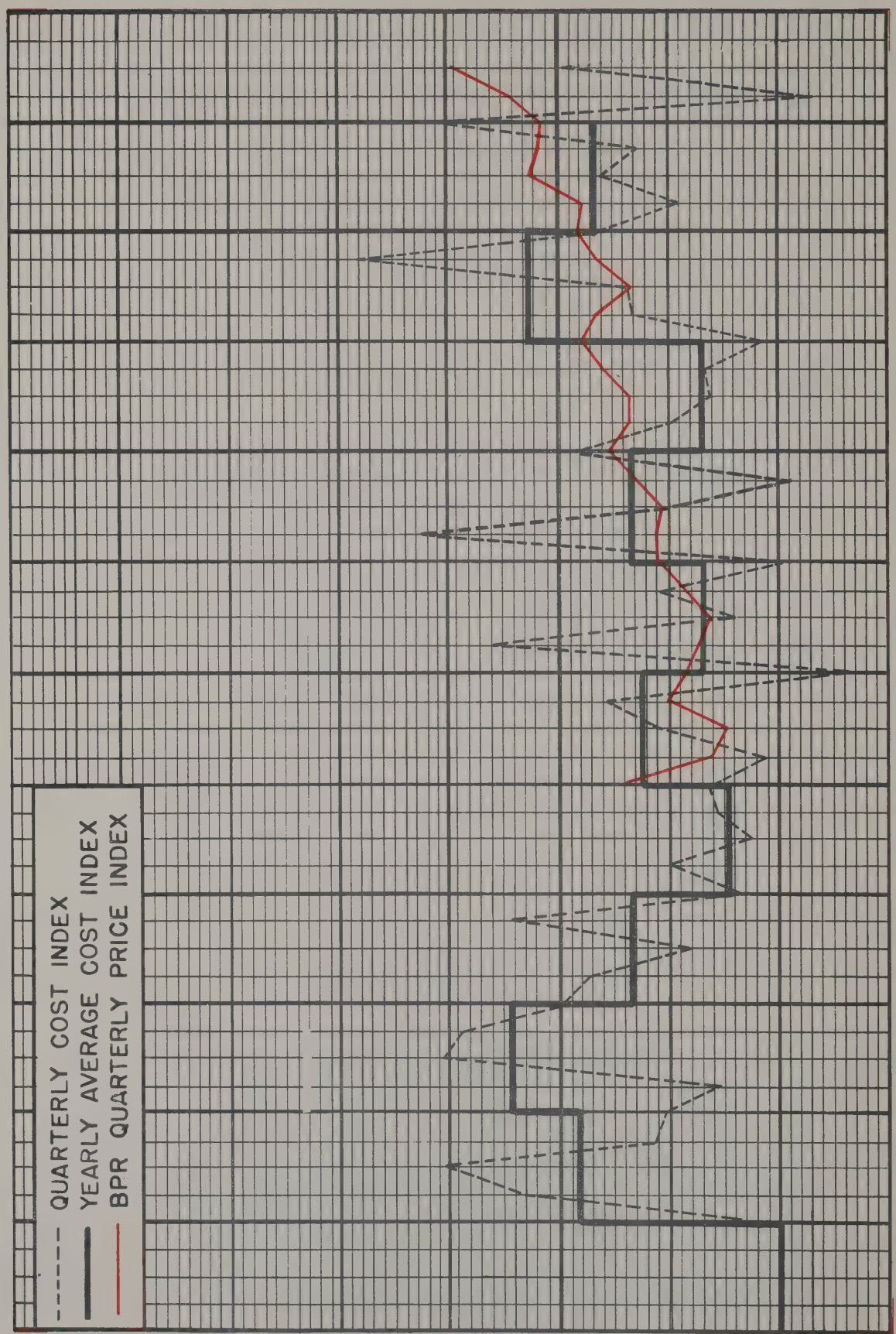
MATERIALS AND TESTING DIVISION

| Material Tested | Number of Samples 1965 | 1966 | Total | Number of Tests Each Sample | Total |
|---|---|---|---|---|---|
| IV. Asphalt Section | | | | | |
| Liquid Asphalts | 1004 | 747 | 1751 | 9 | 15759 |
| Penetration Asphalts (Asphaltic Cement) | 2357 | 1137 | 3494 | 8 | 27952 |
| Emulsified Asphalt | 191 | 141 | 332 | 6 | 1992 |
| Bituminous Mixtures | 539 | 369 | 908 | 6 | 5448 |
| Subtotals | | | 6,485 | | 51,151 |
| V. Bituminous Mix Design Section | | | | | |
| Preliminary Pits | 44 | 35 | 79 | 24 | 1896 |
| Production Samples (Gravel) | 64 | 58 | 122 | 18 | 2196 |
| Production Samples (Bituminous) | 39 | 65 | 104 | 4 | 416 |
| Pavement Cores | 14 | 6 | 20 | 1 | 20 |
| Admixture Blends | 8 | 36 | 40 | 20 | 800 |
| Subtotals | | | 365 | | 5,328 |
| VI. Soils and Foundation Materials Section * | | | | | |
| Aggregate Degradation | 82 | 128 | 210 | 2 | 420 |
| Calculated Maximum Density | 6 | 142 | 148 | 5 | 740 |
| Compacted Density, Harvard Miniature | 18 | 162 | 180 | 4 ave. | 720 |
| Hveem Stabilometer R Value | 140 | 219 | 359 | 12 | 4308 |
| Natural Moisture, Foundation & Settlement Studies | 5 | 25 | 30 | 1 | 30 |
| Permeability | 0 | 10 | 10 | 2 | 20 |
| Soluble Salts | 495 | 147 | 642 | 3 | 1926 |
| Subtotals | | | 1,579 | | 8,164 |
| GRAND TOTAL | | | 25,178 | | 141,509 |

* Preliminary Roadbed Design Completed:
12 Interstate and Urban Projects
15 Primary and Secondary Projects

Special Reports
1 Project, Pavement and Roadbed Summary
1 Project, Material Control for Excavation and Embankment
2 Projects, Roadbed Foundation Penetration Probe Survey
1 Project, Consolidation Settlement Estimate
1 Project, Water Table Survey

CHART 1


STATE OF NEVADA
DEPARTMENT OF HIGHWAYS
PRICE INDEX
CONSTRUCTION COST
1955=100
QUARTERLY COST INDEX
YEARLY AVERAGE COST INDEX
BPR QUARTERLY PRICE INDEX
PRICE INDEX
160
150
140
130
120
110
100
90
1955
1956
1957
1958
1959
1960
1961
1962
1963
1964
1965
1966
CALENDAR YEARS

STATE OF NEVADA
DEPARTMENT OF HIGHWAYS
AVERAGE CONTRACT PRICES
TABLE 9

| Calendar Year | Road. Excav. Cu. Yd. | Borrow Cu. Yd. | Type I Gravel Ton | Type 2 Gravel Ton | Liquid Asphalts Ton | Plantmix Surface Ton | Class A & Class AA Concrete Cu. Yd. | Reinf. Steel Pound | 24 Inch CMP L. Ft. | Composite Index |
|---|---|---|---|---|---|---|---|---|---|---|
| 1955 Average | .388 | .219 | .660 | .869 | 31.97 | 2.64 | 61.17 | .120 | 5.55 | 100.0 |
| 1956 Average | .506 | .300 | .845 | .893 | 39.86 | 2.48 | 78.98 | .144 | 6.08 | 118.2 |
| 1957 Average | .562 | .291 | .751 | .920 | 39.63 | 2.96 | 71.63 | .147 | 6.72 | 124.3 |
| 1958 Average | .535 | .241 | .683 | .813 | 35.86 | 2.49 | 71.37 | .142 | 6.73 | 113.3 |
| 1959 Average | .397 | .234 | .704 | .925 | 35.18 | 2.53 | 66.86 | .129 | 6.61 | 104.6 |
| 1960 Average | .541 | .249 | .737 | .863 | 33.52 | 2.41 | 65.71 | .127 | 6.67 | 112.4 |
| 1961 Average | .437 | .350 | .797 | .884 | 32.98 | 2.53 | 62.61 | .114 | 6.81 | 106.9 |
| 1962 Average | .443 | .309 | .847 | 1.037 | 34.11 | 2.86 | 66.36 | .116 | 6.28 | 113.2 |
| 1963 Average | .428 | .299 | .839 | .984 | 30.73 | 2.68 | 63.10 | .098 | 6.20 | 106.9 |
| 1964 1st Qtr. | .446 | .319 | .881 | 1.061 | 28.66 | 3.25 | 68.75 | .107 | 5.30 | 112.7 |
| *2nd Qtr. | .380 | .663 | .922 | 1.104 | 31.21 | 3.14 | 63.90 | .095 | 6.36 | 113.6 |
| 3rd Qtr. | .641 | .451 | .848 | 1.417 | 35.13 | 3.14 | 74.89 | .114 | 5.89 | 138.0 |
| 4th Qtr. | .524 | .310 | .834 | 1.098 | 29.65 | 2.56 | 76.62 | .122 | 6.23 | 115.4 |
| 1964 Average | .520 | .509 | .875 | 1.253 | 29.98 | 3.06 | 67.49 | .103 | 5.85 | 122.6 |
| 1965 1st Qtr. | .370 | .302 | .814 | 1.159 | 33.24 | 2.87 | 71.79 | .135 | 5.27 | 109.3 |
| 2nd Qtr. | .479 | .295 | .762 | 1.179 | 31.04 | 2.96 | 74.42 | .121 | 6.48 | 116.1 |
| 3rd Qtr. | .327 | .319 | .997 | 1.372 | 32.04 | 3.32 | 59.48 | .125 | 5.50 | 112.7 |
| 4th Qtr. | .618 | .372 | 1.008 | 1.177 | 34.07 | 3.01 | 68.88 | .137 | 5.20 | 131.5 |
| 1965 Average | .444 | .322 | .907 | 1.202 | 32.69 | 3.00 | 70.77 | .127 | 5.35 | 116.8 |
| 1966 1st Qtr. | .472 | .372 | .845 | 1.044 | 27.43 | 2.78 | 77.40 | .122 | 5.40 | 96.8 |
| 2nd Qtr. | .612 | .980 | 1.079 | 1.044 | 31.47 | 3.04 | 64.55 | .110 | 6.59 | 119.7 |

* Contract 1179 (4th St. -Reno) not used to compute Average

TABLE 10

CONTRACTS AND LETTING

1 July 1964 thru 30 June 1966

45 Contracts and 33 Bid Openings

14 Interstate

17 Primary

7 Secondary

4 Urban

0 State

3 Beautification

| Amount of Contract | No. Contracts | No. Bidders |
|---|---|---|
| up to $ 50,000 | 12 | 42 |
| $ 50,000 to $ 100,000 | 2 (1 rejected) | 5 |
| $ 100,000 to $ 250,000 | 2 (1 rejected) | 4 |
| $ 250,000 to $ 500,000 | 5 | 22 |
| $ 500,000 to $1,000,000 | 9 | 60 |
| $1,000,000 to $1,500,000 | 2 | 12 |
| $1,500,000 to $3,000,000 | 9 | 49 |
| over $3,000,000 | 4 | 25 |
| | 45 | 219 |
| Contracts awarded | - 2 | |
| | 43 | |

219 bids submitted on 45 contracts

Average 4.87 bidders per contract

TABLE 11

TRANSPORTATION PERMITS
7/1/64---------6/30/66

| | Number Units Moved |
|---|---|
| Heavy and Highway | 4,922 |
| Farm Machinery | 442 |
| *Mobile Homes | 8,520 |
| Buildings | 709 |
| Military | 179 |
| Miscellaneous | 606 |
| Total | 15,378 |

TRANSPORTATION PERMITS ISSUED

| | |
|---|---|
| 7/1/64 thru 12/31/64 | 4,263 |
| 1/1/65 thru 12/31/65 | 6,103 |
| 1/1/66 thru 6/30/66 | 1,913 |
| Total | 12,279 |

* The Legislature of the State of Nevada in their 1965 session amended NRS 484.600 related to "Maximum Width of Vehicles" allowing mobile homes in excess of 8 feet wide and not to exceed 12 feet wide to be moved on their own wheels, provided they meet the test set forth in the amended law which became effective July 1, 1965. The Department of Highways has been delegated the responsibility for issuing such permits, and from the guide lines set forth in the law, established the policy of issuing permits for the movement of mobile homes on a single trip or annual trip basis. A permit issued on an annual trip basis allows the permittee to transport a mobile home as many times as he wished under the authority of one permit. The effect of the law is reflected in the reduction of the total number of permits issued and not in the movements of mobile homes.

TABLE 12

ENCROACHMENT PERMITS

7/1/64 - 6/30/66

| | No. Units Issued |
|---|---|
| TELEPHONE & TELEGRAPH LINES | 93 |
| POWER LINES | 72 |
| SERVICE PIPE | |
| GAS LINES | 130 |
| WATER LINES | 112 |
| SEWER LINES | 43 |
| CULVERTS | 2 |
| MISCELLANEOUS PIPE | 4 |
| APPROACH ROADS AND DRIVEWAYS | 238 |
| MISCELLANEOUS | 60 |
| GRAND TOTAL | 754 |

TABLE 13

JOB AUTHORIZATION DATA - 7/1/64 - 6/30/66

| District or Division | Number of authorizations this biennium | Amount authorized this biennium | Amount authorized previously expended this biennium | Amount expended and authorized this biennium | Total Expenditures | Balance Incomp. |
|---|---|---|---|---|---|---|
| One | 22 | 193,590.00 | - 0 - | 183,928.38 | 183,928.38 | 9,661.62 |
| Two | 51 | 766,770.00 | 146,513.11 | 591,714.87 | 738,227.98 | 175,055.13 |
| Three | 10 | 234,700.00 | 42,277.07 | 252,487.80 | 294,764.87 | 17,787.80 |
| Four | 12 | 408,100.00 | 97,629.46 | 217,687.94 | 315,317.40 | 190,412.06 |
| Five | 10 | 216,900.00 | 90,959.79 | 165,378.31 | 256,338.10 | 51,521.69 |
| Six | 20 | 189,050.00 | 19,695.20 | 81,527.19 | 101,222.39 | 107,522.81 |
| Seven | 1 | 3,200.00 | - 0 - | - 0 - | - 0 - | 3,200.00 |
| Eight | -- | - 0 - | 1,664.98 | - 0 - | 1,664.98 | - 0 - |
| Nine | 12 | 55,450.00 | 59,959.26 | 80,180.04 | 140,139.30 | 24,730.04 |
| TOTALS | 138 | 2,067,760.00 | 449,079.94 | 1,572,904.53 | 2,021,984.47 | 494,855.47 |

Note: Report Covers #10900 - 11066 Inclusive

TABLE 14

TABULATION INDICATING NUMBER OF CONTRACTORS PREQUALIFIED BY THE DEPARTMENT AT THE CLOSE OF THE BIENNIUM

| RATING | NUMBER OF CONTRACTORS |
|---|---|
| $ 50,000 to 90,000 | 1 |
| 100,000 to 240,000 | 0 |
| 250,000 to 490,000 | 11 |
| 500,000 to 990,000 | 13 |
| 1,000,000 to 1,490,000 | 12 |
| 1,500,000 to 2,490,000 | 10 |
| 2,500,000 to 4,990,000 | 26 |
| 5,000,000 to 9,990,000 | 15 |
| 10,000,000 and over | 35 |
| Total | 123 |

June 1964 there were 110 prequalified contractors.

June 1966 there were 123 prequalified contractors.

CHART 2

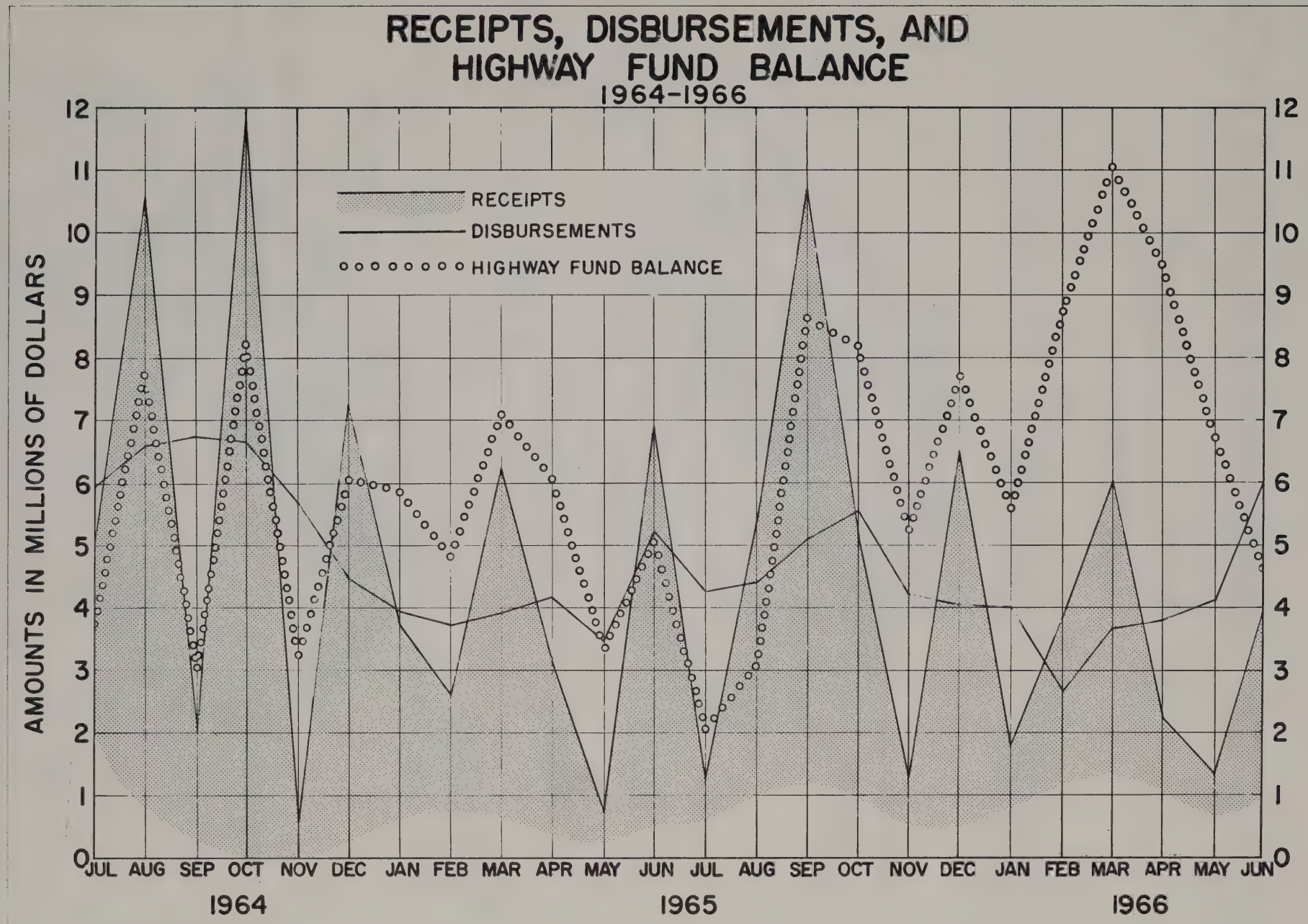
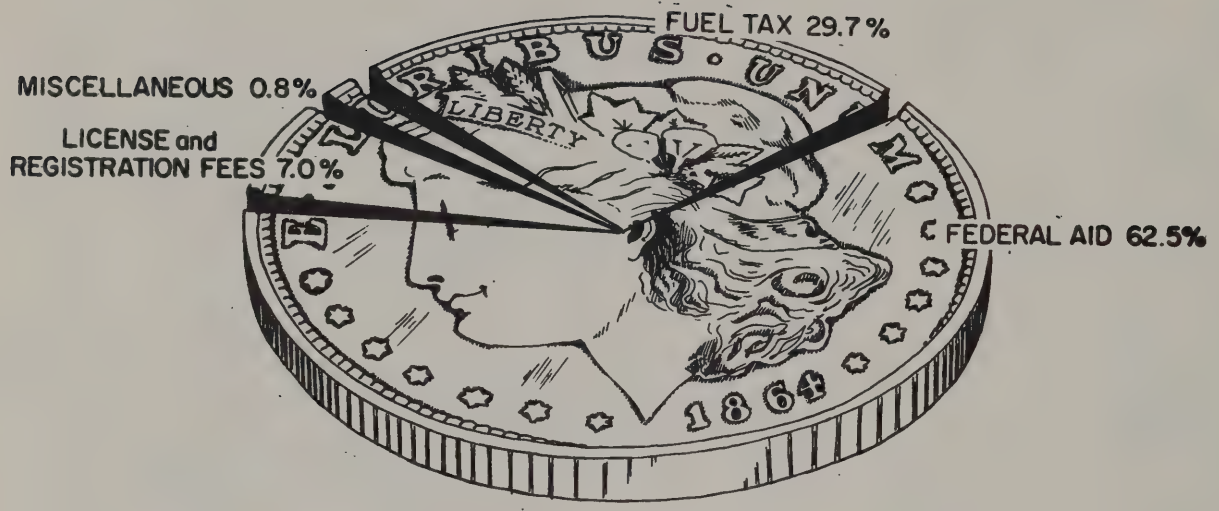

RECEIPTS, DISBURSEMENTS, AND
HIGHWAY FUND BALANCE
1964-1966
AMOUNTS IN MILLIONS OF DOLLARS
RECEIPTS
DISBURSEMENTS
HIGHWAY FUND BALANCE
0
1
2
3
4
5
6
7
8
9
10
11
12
JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN
1964
1965
1966

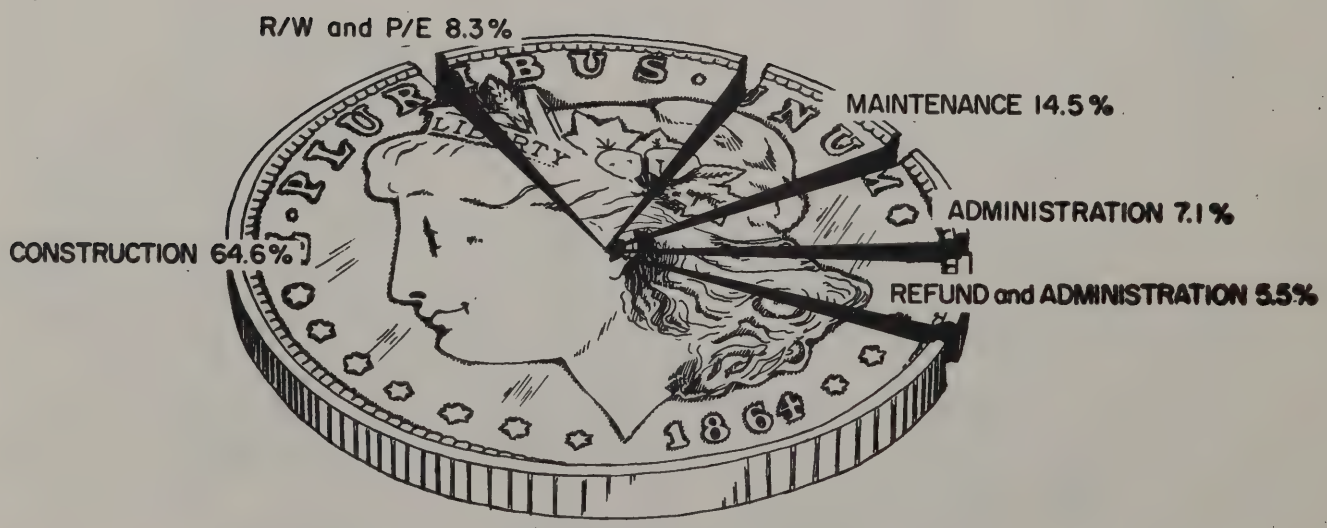
CHART 3

# RECEIPTS AND DISBURSEMENTS

## BIENNIUM




RECEIPTS




DISBURSEMENTS

# State of Nevada
# Department of Highways

# Department Financial History
# 1917-1966

## Revenues

| | |
|---|---|
| FEDERAL AID REIMBURSEMENTS | 307,737,281 |
| STATE SOURCES | 238,076,749 |
| SUB TOTAL GROSS | 545,814,030 |
| LESS: REFUNDS & COLLECTION COSTS | 26,574,342 |
| TOTAL RECEIPTS | 519,239,688 |

## Disbursements

| | |
|---|---|
| CONSTRUCTION | 310,556,054 |
| MAINTENANCE | 69,626,253 |
| RIGHT OF WAY & PRELIMINARY ENGINEERING | 39,805,126 |
| ADMINISTRATION | 34,242,730 |
| TOTAL DISBURSEMENTS | 454,230,163 |

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 16

STATEMENT OF RECEIPTS & DISBURSEMENTS 1965-1966

CONTROLLERS RECONCILIATION

| ITEMS | 1965 | 1966 | Total 1965-1966 | Percent |
|---|---|---|---|---|
| Revenues: | | | | |
| Federal Aid | 45,031,882.00 | 35,573,350.00 | 80,605,232.00 | 67.97 |
| Gasoline, Use Fuel Tax (Gross) | 10,998,386.93 | 12,036,255.19 | 23,034,642.12 | 19.44 |
| Auto License Fees | 2,833,441.88 | 3,150,622.99 | 5,984,064.87 | 5.05 |
| Common Carrier Licenses, Fees | 3,244,483.20 | 3,243,736.03 | 6,488,219.23 | 5.47 |
| Driver's Sicenses | 478,321.99 | 290,360.60 | 768,682.59 | .65 |
| Participation by Others | 132,640.35 | - 0 - | 132,640.35 | .11 |
| Accounts Receivable | 1,001,482.39 | 546,294.37 | 1,547,776.76 | 1.31 |
| Revenues (Gross) | 63,720,638.74 | 54,840,619.18 | 118,561,257.92 | 100.00 |
| Refunds & Collection Costs | | | | |
| Gasoline, Use Fuel Tax Refunds | 60,619.88 | 198,474.69 | 259,094.57 | 5.31 |
| Gasoline, Tax Administration | 3,230.83 CR | 38,341.22 | 35,110.39 | .72 |
| Public Service Commission | 2,889.04 CR | 116,804.07 | 113,915.03 | 2.33 |
| Department of Motor Vehicles | 1,831,558.58 | 2,642,761.57 | 4,474.320.15 | 91.64 |
| Refunds & Collections | 1,886.058.59 | 2,996,381.55 | 4,882.440.14 | 100.00 |
| Transfer Motor Vehicle Bldg. Fund | - 810,000.00 | - 0 - | 810,000.00 | |
| Net Useable Receipts | 61,024,580.15 | 51,844,237.63 | 112,888,025.78 | |

* Gross Revenues Less Refunds and Collection Costs.

| | | | | |
|---|---|---|---|---|
| Disbursements: | | | | |
| Construction | 41,569,398.85 | 25,612,950.14 | 67,182,348.99 | 59.56 |
| Surveys, Plans and Right of Way | 11,067,185.26 | 17,422,655.38 | 28,489,840.64 | 25.27 |
| Maintenance | 4,652,026.63 | 5,218,425.04 | 9,870,451.67 | 8.76 |
| Buildings | 460,930.91 CR | 191,997.09 | 268,933.82 CR | .29 CR |
| Equipment and Plants | 444,554.94 | 655,748.15 | 1,100,303.09 | .98 |
| Administration | 1,350,021.54 | 1,558,044.08 * | 2,908,065.62 | 2.58 |
| Research & Investigation, Planning | 541,010.32 | 585,499.13 | 1,126,509.45 | 1.00 |
| Public Relations | 102,938.24 | 47,290.22 | 150,228.46 | .13 |
| Highways and Parks Magazine | 149,593.04 | 150,693.26 | 300,286.30 | .27 |
| State Road Maps | 1,311.65 | 39,866.84 | 41,178.49 | .04 |
| Annual Traffic Studies | 68,414.78 | 42,973.71 | 111,388.49 | .10 |
| Recoveralbe Expenditures | 1,108,818.39 | 685,801.53 | 1,794,619.92 | 1.60 |
| Disbursements | 60,594,342.73 | 52,211,944.57 * | 112,806,287.30 | 100.00 |

* Includes rebate from Personnel $ 19,208.00

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 17

RECONCILIATION WITH STATE CONTROLLER 1965-1966

| | | | |
|---|---|---|---|
| Balance - July 1, 1964 | | | |
| Highway Fund | | | 4,612,562.22 |
| Receipts - Gross | 63,720,638.74 | | |
| Less: Refunds & Collection Costs | - 1,886,058.59 | | |
| Less: Fund Transfer (D.M.V. Bldg.) | - 810,000.00 | | |
| Net Useable | | | + 61,024,580.15 |
| Sub-Total | | | 65,637,142.37 |
| Less: Highway Department Disbursements 1965 | | | - 60,594,342.73 |
| Highway Fund Balance June 30, 1965 | | | 5,042,799.64 |
| Highway Fund Balance June 30, 1965 | | 5,042,799.64 | |
| Plus: | | | |
| Disbursements included in F.Y. 1965 by Highway Department, included in F.Y. 1966 by State Controller | | + 1,267,316.29 | |
| State Controllers Balance June 30, 1965 | | | 6,310,115.93 |
| Balance July 1, 1965 | | | |
| Highway Fund | | | 5,042,799.64 |
| Receipts Gross | | 54,840,619.18 | |
| Less: Refunds & Collection Costs | | - 2,996,381.55 | |
| Net Useable | | | + 51,844,237.63 |
| Sub-Total | | | 56,886,037.27 |
| Less: Highway Department Disbursements-1966 | | | - 52,211,944.57 * |
| Highway Fund Balance June 30, 1966 | | | 4,675,092.70 |
| Highway Fund Balance June 30, 1966 | | 4,675,092.70 | |
| Plus: | | | |
| Disbursement Activity included in F.Y. 1966 by Highway Department-included in F.Y. 1967 by Controller | | + 982,779.88 | |
| Less: Deposit by Highway Department included in 1966-included in 1967 by State Controller | | - 449,937.41 | |
| State Controller Balance June 30, 1966 | | | 5,207,935.17 |

* Includes rebate from Personnel $ 19,208.00

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 18

ACTIVITY OF STATE HIGHWAY FUND

| PERIOD ENDING | RECEIPTS | DISBURSEMENTS | HIGHWAY FUND BALANCE |
|---|---|---|---|
| 1964 | | | |
| July | $ 5,078,292.70 | $ 5,911,853.47 | $ 3,779.001.45 |
| August | 10,556,071.81 | 6,581,307.67 | 7,753,765.59 |
| September | 2,024,814.07 | 6,723,505.42 | 3,055,074.24 |
| October | 11,805,596.57 | 6,636,780.04 | 8,223,890.77 |
| November | 698,557.94 | 5,663,855.86 | 3,258,592.85 |
| December | 7,274,789.99 | 4,471,645.90 | 6,061,736.94 |
| 1965 | | | |
| January | 3,756,213.44 | 3,954,176.08 | 5,863,774.30 |
| February | 2,673,956.74 | 3,742,447.05 | 4,795,283.99 |
| March | 6,256,121.88 | 3,953,757.57 | 7,097,648.30 |
| April | 3,183,131.23 | 4,205,758.52 | 6,075,021.01 |
| May | 780,419.09 | 3,494,208.12 | 3,361,231.98 |
| June | 6,936,614.69 | 5,255,047.03 | 5,042,799.64 |
| July | 1,292,544.84 | 4,277,291.87 | 2,058,052.61 |
| August | 5,432,590.75 | 4,452,213.09 | 3,038,430.27 |
| September | 10,727,232.59 | 5,122,958.71 | 8,642,704.15 |
| October | 5,220,414.83 | 5,680,703.34 | 8,182,415.64 |
| November | 1,349,786.14 | 4,255,583.17 | 5,276,618.61 |
| December | 6,543,773.75 | 4,101,631.52 | 7,718,760.84 |
| 1966 | | | |
| January | 1,870,369.89 | 3,993,489.70 | 5,595,641.03 |
| February | 5,860,961.49 | 2,704,855.52 | 8,751,747.00 |
| March | 6,025,996.11 | 3,700.213.18 | 11,077,529.93 |
| April | 2,250,316.91 | 3,818,750.82 | 9,509,096.02 |
| May | 1,347,269.99 | 4,114,004.32 | 6,742,361.69 |
| June | 3,942,188.34 | 6,009,457.33 | 4,675,092.70 |
| Average (Biennium) | 4,703,667.74 | 4,701,062.30 | 6,068,177.98 |

Note: Revenues are net after Refunds & Revenue Subventions

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

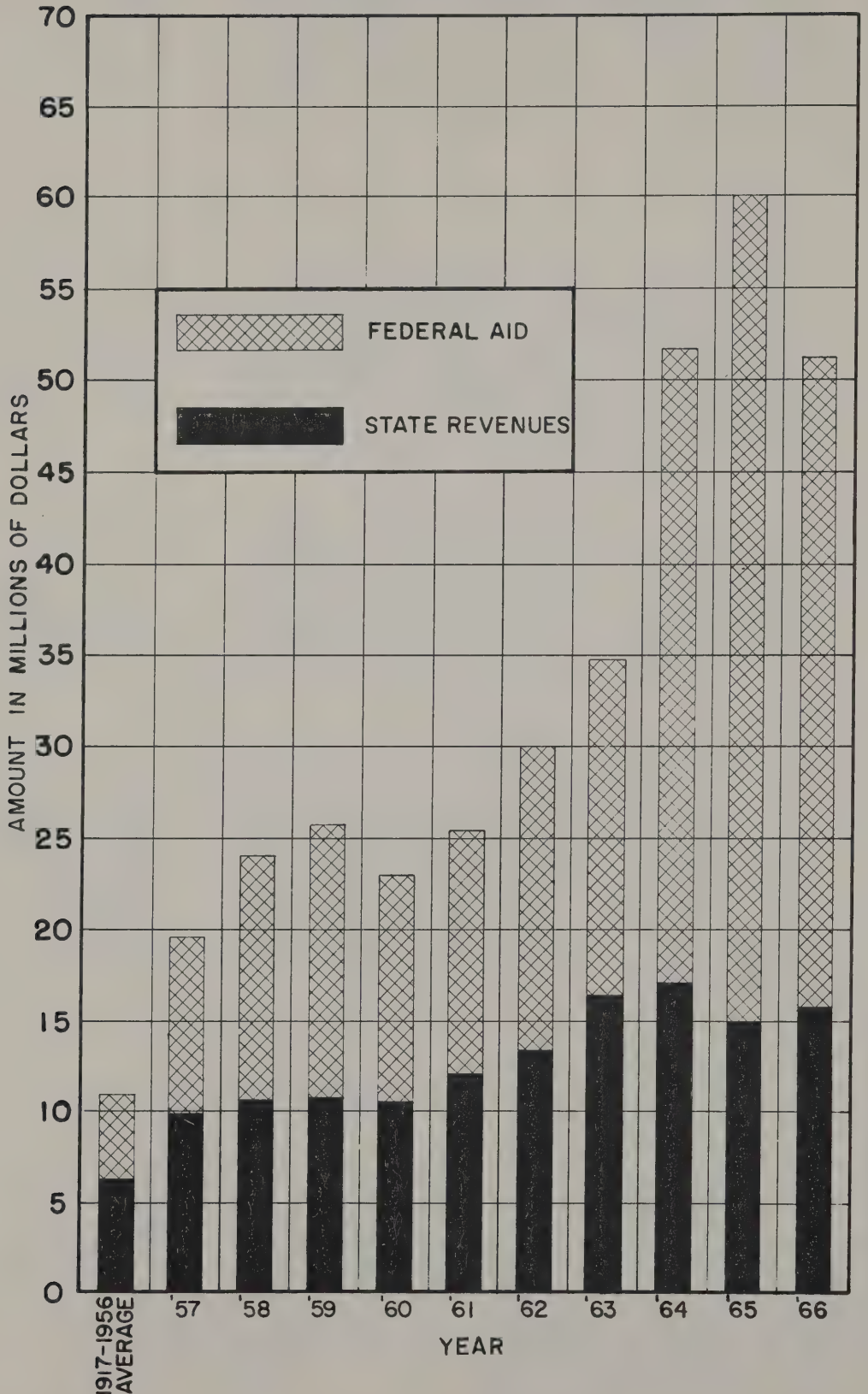
TABLE 19

STATUS OF STATE HIGHWAY FUND

| PERIOD ENDING | VOUCHERED AMOUNTS NOT PAID | HIGHWAY FUND BALANCE | TOTAL ESTIMATED H.F. BALANCE | CONTROLLER'S BALANCE |
|---|---|---|---|---|
| 1964 | | | | |
| July | $ 2,360,599.00 | $ 3,779,001.45 | $ 6,139,600.45 | $ 4,132,533.63 |
| August | 2,059,772.00 | 7,753,765.59 | 9,813,537.59 | 8,339,657.59 |
| September | 6,895,409.00 | 3,055,074.24 | 9,950,483.24 | 3,498,706.64 |
| October | 1,330,215.00 | 8,223,890.77 | 9,554,105.77 | 8,503,403.10 |
| November | 5,560,870.00 | 3,258,592.85 | 8,819,462.85 | 3,187,396.07 |
| December | 959,757.00 | 6,061,736.94 | 7,021,493.94 | 6,553,332.94 |
| 1965 | | | | |
| January | 959,757.00 | 5,863,774.30 | 6,823,531.30 | 6,488,102.37 |
| February | 3,335,357.00 | 4,795,283.99 | 8,130,640.99 | 5,249,463.68 |
| March | 1,032,871.00 | 7,097,648.30 | 8,130,519.30 | 7,021,184.11 |
| April | 1,740,217.00 | 6,075,021.01 | 7,815,238.01 | 6,949,955.91 |
| May | 4,647,821.00 | 3,361,231.98 | 8,009,052.98 | 3,529,175.65 |
| June | 2,054,033.00 | 5,042,799.64 | 7,096,832.64 | 6,310,115.93 |
| July | 5,680,194.00 | 2,058,052.61 | 7,738,246.61 | 2,687,975.10 |
| August | 7,468,668.00 | 3,038,430.27 | 10,507,098.27 | 3,552,295.18 |
| September | 1,285,462.00 | 8,642,704.15 | 9,928,166.15 | 5,042,266.22 |
| October | 1,524,250.00 | 8,182,415.64 | 9,706,665.64 | 8,633,918.65 |
| November | 5,295,369.00 | 5,276,618.61 | 10,571,987.61 | 5,034,109.33 |
| December | 2,394,218.00 | 7,718,760.84 | 10,112,978.84 | 7,890,153.65 |
| 1966 | | | | |
| January | 4,209,330.00 | 5,595,641.03 | 9,804,971.03 | 5,354,620.18 |
| February | 3,878,826.00 | 8,751,747.00 | 12,630,573.00 | 6,631,412.21 |
| March | 1,499,279.00 | 11,077,529.93 | 12,576,808.93 | 9,760,622.01 |
| April | 1,614,566.00 | 9,509,096.02 | 11,123,662.02 | 9,993,840.14 |
| May | 4,043,739.00 | 6,742,361.69 | 10,786,100.69 | 7,131,972.68 |
| June | 4,330,602.00 | 4,675,092.70 | 9,005,694.70 | 5,207,935.17 |
| Average (Biennium) | | 6,068,177.98 | 9,241,560.52 | 6,111,868.67 |

CHART 4

# FEDERAL AID AND STATE REVENUES BY FISCAL YEARS 1917-1966



STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 20

HISTORICAL RECORD REVENUES - 1917 - 1966

| ITEMS | 1917 - 1960 | 1961 - 1962 | 1963 - 1964 | 1965 - 1966 | Total to Date |
|---|---|---|---|---|---|
| Highway User Revenues | | | | | |
| Fuel Taxes | 86,888,290.75 | 16,997,371.54 | 19,143,449.15 | 23,053,850.12 | 146,082,961.56 |
| Registration Fees | 15,975,432.94 | 3,828,653.80 | 5,154,500.09 | 5,984,064.87 | 30,942,651.70 |
| Carrier Fees | 23,877,780.18 | 5,685,419.30 | 7,242,704.36 | 6,488,219.23 | 43,294,123.07 |
| Drivers Licenses | 1,654,807.41 | 437,589.28 | 735,290.28 | 768,682.59 | 3,596,369.56 |
| Sub-Total | 128,396,311.28 | 26,949,033.92 | 32,275,943.88 | 36,294,816.81 | 223,916,105.89 |
| Participation By Others | | | | | |
| Federal Aid | 146,291,525.12 | 27,915,222.00 | 52,925,302.00 | 80,605,232.00 | 307,737,281.12 |
| Cities & Counties | 4,933,738.65 | 13,642.96 | -0- | 132,640.35 | 5,080,021.96 |
| Other Participation | 603,242.17 | -0- | -0- | -0- | 603,242.17 |
| Sub-Total | 151,828,505.94 | 27,928,864.96 | 52,925,302.00 | 80,737.872.35 | 313,420,545.25 |
| Other Revenues | | | | | |
| Miscellaneous | 4,075,093.82 | -0- | -0- | -0- | 4,075,093.82 |
| Accounts Receivable | 2,307,210.03 | 602,603.58 | 1,414,605.77 | 1,547,776.76 | 5,872,196.14 |
| Sub-Total | 6,382,303.85 | 602,603.58 | 1,414,605.77 | 1,547,776.76 | 9,947,289.96 |
| Total Revenues | 286,607,121.07 | 55,480,502.46 | 86,615,851.65 | 118,580,465.92 | 547,283,941.10 |
| Less: Disbursements | -270,539,131.27 | -48,162,071.89 | -83,297,808.11 | -112,825,495.30 | -514,824,506.57 |
| Less: Refunds & Collection Costs | - 12,980,564.99 | - 3,828,818.31 | - 4,882,518.39 | - 4,882,440.14 | - 26,574,341.83 |
| Less: Fund Transfers | - 250,000.00 | - 904,000.00 | + 754,000.00 | - 810,000.00 ** | - 1,210,000.00 |
| Fund Balance From Previous F.Y. | -0- | + 2,837,424.81 | + 5,423,037.07 | + 4,612,562.22 | -0- |
| Ending Highway Fund Balance | 2,837,424.81 | 5,423,037.07 | 4,612,562.22 | 4,675,092.70 | 4,675,092.70 |

Building Fund *
Motor vehicle Building Fund **

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 21

ANTICIPATED REVENUES AVAILABLE TO THE HIGHWAY DEPARTMENT FOR THE
1968 - 1969 BIENNIUM WITH COMPARISONS TO THE 1966 - 1967 BIENNIUM

| | 1966 Actual | 1967 Work Program | Biennium Totals | 1968 Agency Request | 1969 Agency Request | Anticipated Biennium Totals |
|---|---|---|---|---|---|---|
| REVENUES: | | | | | | |
| Federal Participation | | | | | | |
| Interstate System | 25,058,911.00 | 30,744,000.00 | 55,802,911.00 | 30,309,000.00 | 30,437,000.00 | 60,746,000.00 |
| Primary System | 4,880,649.00 | 5,988,000.00 | 10,868,649.00 | 5,912,000.00 | 5,936,000.00 | 11,848,000.00 |
| Secondary System | 5,364,568.00 | 6,582,000.00 | 11,946,568.00 | 6,449,000.00 | 6,476,000.00 | 12,925,000.00 |
| Other (Planning) | 269,222.00 | 330,000.00 | 599,222.00 | 322,000.00 | 324,000.00 | 646,000.00 |
| Sub-Total Federal Participation | 35,573,350.00 | 43,644,000.00 | 79,217,350.00 | 42,992,000.00 | 43,173,000.00 | 86,165,000.00 |
| Gross Highway User Revenues | | | | | | |
| Motor Fuel Taxes | 12,036,255.19 | 16,478,000.00 | 28,514,255.19 | | | |
| Common Carrier | 3,243,736.03 | 4,441,000.00 | 7,684,736.03 | | | |
| Auto Registrations | 3,150,622.99 | 4,313,000.00 | 7,463,622.99 | | | |
| Drivers Licenses | 290,360.60 | 398,000.00 | 688,360.60 | | | |
| Sub-Total | 18,720,974.81 | 25,630,000.00 | 44,350,974.81 | | | |
| Less: Refunds & Collection Costs | | | | | | |
| Refunds | 198,474.69 | 272,000.00 | 470,474.69 | | | |
| Public Service Comm. | 116,804.07 | 160,000.00 | 276,804.07 | | | |
| Tax Comm. (Gas Tax Act) | 38,341.22 | 52,000.00 | 90,341.22 | | | |
| Dept. of Motor Vehicles | 2,642,761.57 | 3,618,000.00 | 6,260,761.57 | | | |
| Sub-Total | 2,996,381.55 | 4,102,000.00 | 7,098,381.55 | | | |
| Sub-Total Net User Revenues | 15,724,593.26 | 21,528,000.00 | 37,252,593.26 | 16,176,000.00 | 17,368,000.00 | 33,544,000.00 |
| Other Revenues | | | | | | |
| Participation - Cities & Counties | -0- | -0- | -0- | -0- | -0- | -0- |
| Accounts Receivable | 546,294.37 | 500,000.00 | 1,046,294.37 | 642,000.00 | 659,000.00 | 1,301,000.00 |
| Sub-Total Other Revenues | 546,294.37 | 500,000.00 | 1,046,294.37 | 642,000.00 | 659,000.00 | 1,301,000.00 |
| Total Useable Revenues | 51,844,237.63 | 65,672,000.00 | 117,516,237.63 | 59,810,000.00 | 61,200,000.00 | 121,010,000.00 |

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 22

NEVADA'S SHARE OF FEDERAL AID ALLOTMENTS

1917 - 1967

| | |
|---|---|
| Primary | $ 86,559,683.63 |
| Secondary | 40,754,452.00 |
| Urban | 1,991,965.00 |
| Interstate | 86,803,268.00 |
| Public Lands | 4,999,207.32 |
| Other Federal Funds | 18,384,760.69 |
| D Fund | 3,839,673.00 |
| Sub-total 1917 - 1962 | $ 243,333,009.64 |
| 1963 Primary | 4,810,272.00 |
| 1963 Secondary | 3,199,450.00 |
| 1963 Urban | 348,676.00 |
| 1963 Interstate | 12,063,300.00 |
| 1963 Other Federal Funds | 8,910,000.00 |
| 1964 Primary | 4,871,838.00 |
| 1964 Secondary | 3,240,252.00 |
| 1964 Urban | 357,801.00 |
| 1964 Interstate | 13,068,575.00 |
| 1965 Primary | 4,972,303.00 |
| 1965 Secondary | 3,307,069.00 |
| 1965 Urban | 365,358.00 |
| 1965 Interstate | 13,502,498.00 |
| 1965 Public Lands | 699,997.00 |
| 1966 Primary | 4,981,574.00 |
| 1966 Secondary | 3,313,131.00 |
| 1966 Urban | 378,120.00 |
| 1966 Interstate | 14,073,850.00 |
| 1966 Public Lands | 200,000.00 |
| 1966 Other Federal Funds | 403,081.00 |
| 1967 Primary | 4,984,671.00 |
| 1967 Secondary | 3,315,193.00 |
| 1967 Urban | 377,163.00 |
| 1967 Interstate | 18,616,500.00 |
| Sub-total 1963 - 1967 | $ 124,360,672.00 |
| GRAND TOTAL 1917-1967 | $ 367,693,681.64 |

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 23

HISTORICAL RECORD OF FEDERAL PARTICIPATION

1917 - 1966

| FISCAL YEAR | CONSTRUCTION & CONSTRUCTION ENGINEERING | RESEARCH & INVESTIGATION (PLANNING) | RIGHT OF WAY | PRELIMINARY ENGINEERING | TOTAL FEDERAL AID |
|---|---|---|---|---|---|
| 1917 - 1958 | 118,009,879.68 | 1,426,704.31 | 356,740.00 | -0- | 119,793,323.99 |
| 1959 | 14,045,714.55 | 318,858.00 | 56,254.00 | 760,069.00 | 15,180.895.55 |
| 1960 | 9,839,696.58 | 247,917.00 | 365,627.00 | 864,065.00 | 11,317,305.58 |
| 1961 | 10,948,751.00 | 485,171.00 | 316,045.00 | 501,271.00 | 12,251,238.00 |
| 1962 | 14,230,517.00 | 376,774.00 | 301,124.00 | 755,569.00 | 15,663,984.00 |
| 1963 | 16,021,340.00 | 254,751.00 | 1,461,770.00 | 467,671.00 | 18,305,532.00 |
| 1964 | 28,129,856.00 | 324,394.00 | 4,304,288.00 | 1,771,232.00 | 34,619,770.00 |
| 1965 | 34,676,786.00 | 278,120.00 | 7,057,811.00 | 3,019,165.00 | 45,031,882.00 |
| 1966 | 22,262,042.00 | 269,222.00 | 10,096,286.00 | 2,945,800.00 | 35,573,350.00 |
| TOTALS | 268,164,582.81 | 4,081,911.31 | 24,405,945.00 | 11,084,842.00 | 307,737,281.12 |

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 24

FEDERAL FUNDS RECEIVED

BY SYSTEM TYPE AND CLASS OF FUNDS

| Description | 1962 | 1963 | 1964 | 1965 | 1966 | TOTAL FIVE YEARS |
|---|---|---|---|---|---|---|
| Interstate System Funds | | | | | | |
| Right of Way | $ 13,277.00 | $ 1,259,119.00 | $ 3,779,838.00 | $ 6,174,802.00 | $ 8,558,946.00 | $ 19,785,987.00 |
| Preliminary Engineering | 653,705.00 | 306,737.00 | 1,168,956.10 | 2,093,429.00 | 1,971,571.00 | 6,194,398.00 |
| Construction | 8,216,922.00 | 7,917,780.00 | 14,279,561.00 | 20,854,537.00 | 12,669,605.00 | 63,938,405.00 |
| Construction Engineering | 203,667.00 | 879,753.00 | 2,256,126.00 | 1,866,578.00 | 1,527,020.00 | 6,733,144.00 |
| TOTAL INTERSTATE FUNDS | $ 9,087,571.00 | $ 10,363,389.00 | $21,484,481.00 | $ 30,989,351.00 | $ 24,727,142.00 | $ 96,651,934.00 |
| Primary System Funds | | | | | | |
| Right of Way | $ 240,156.00 | $ 161,556.00 | $ 367,331.00 | $ 464,178.00 | $ 1,184,525.00 | $ 2,417,745.00 |
| Preliminary Engineering | 76,898.00 | 93,406.00 | 312,589.00 | 617,007.00 | 633,742.00 | 1,733,642.00 |
| Construction | 4,266,403.00 | 3,518,310.00 | 7,906,740.00 | 7,790,413.00 | 2,624,108.00 | 26,105,974.00 |
| Construction Engineering | 235,335.00 | 390,923.00 | 853,299.00 | 392,488.00 | 373,691.00 | 2,245,736.00 |
| TOTAL PRIMARY FUNDS | $ 4,818,792.00 | $ 4,164,195.00 | $ 9,439,959.00 | $ 9,264,086.00 | $ 4,816,066.00 | $ 32,503,098.00 |
| Secondary System Funds | | | | | | |
| Right of Way | $ 47,691.00 | $ 19,722.00 | $ 94,953.00 | $ 288,043.00 | $ 329,503.00 | $ 779,912.00 |
| Preliminary Engineering | 9,261.00 | 66,416.00 | 282,798.00 | 306,765.00 | 317,594.00 | 982,834.00 |
| Construction | 1,267,952.00 | 2,929,949.00 | 2,338,483.00 | 3,014,478.00 | 4,185,439.00 | 13,736,301.00 |
| Construction Engineering | 13,923.00 | 325,549.00 | 224,153.00 | 414,816.00 | 461,045.00 | 1,439,486.00 |
| TOTAL SECONDARY FUNDS | $ 1,338,827.00 | $ 3,341,636.00 | $ 2,940,387.00 | $ 4,024,102.00 | $ 5,293,581.00 | $ 16,938,533.00 |
| Urban System Funds | | | | | | |
| Right of Way | $ -0- | $ 21,373.00 | $ 152,166.00 | $ 130,783.00 | $ 23,312.00 | $ 327,634.00 |
| Preliminary Engineering | 15,705.00 | 1,112.00 | 6,889.00 | 1,964.00 | 22,893.00 | 48,563.00 |
| Construction | 26,315.00 | 53,169.00 | 253,715.00 | 309,470.00 | 383,061.00 | 1,025,730.00 |
| Construction Engineering | -0- | 5,907.00 | 17,779.00 | 34,006.00 | 38,073.00 | 95,765.00 |
| TOTAL URBAN FUNDS | $ 42,020.00 | $ 81,561.00 | $ 430,549.00 | $ 476,223.00 | $ 467,339.00 | $ 1,497,692.00 |
| Highway Planning (1½%) Funds | $ 376,774.00 | $ 354,751.00 | $ 324,394.00 | $ 278,120.00 | $ 269,222.00 | $ 1,603,261.00 |
| GRAND TOTALS | $15,663,984.00 | $ 18,305,532.00 | $34,619,770.00 | $ 45,031,882.00 | $ 35,573,350.00 | $149,194,518.00 |

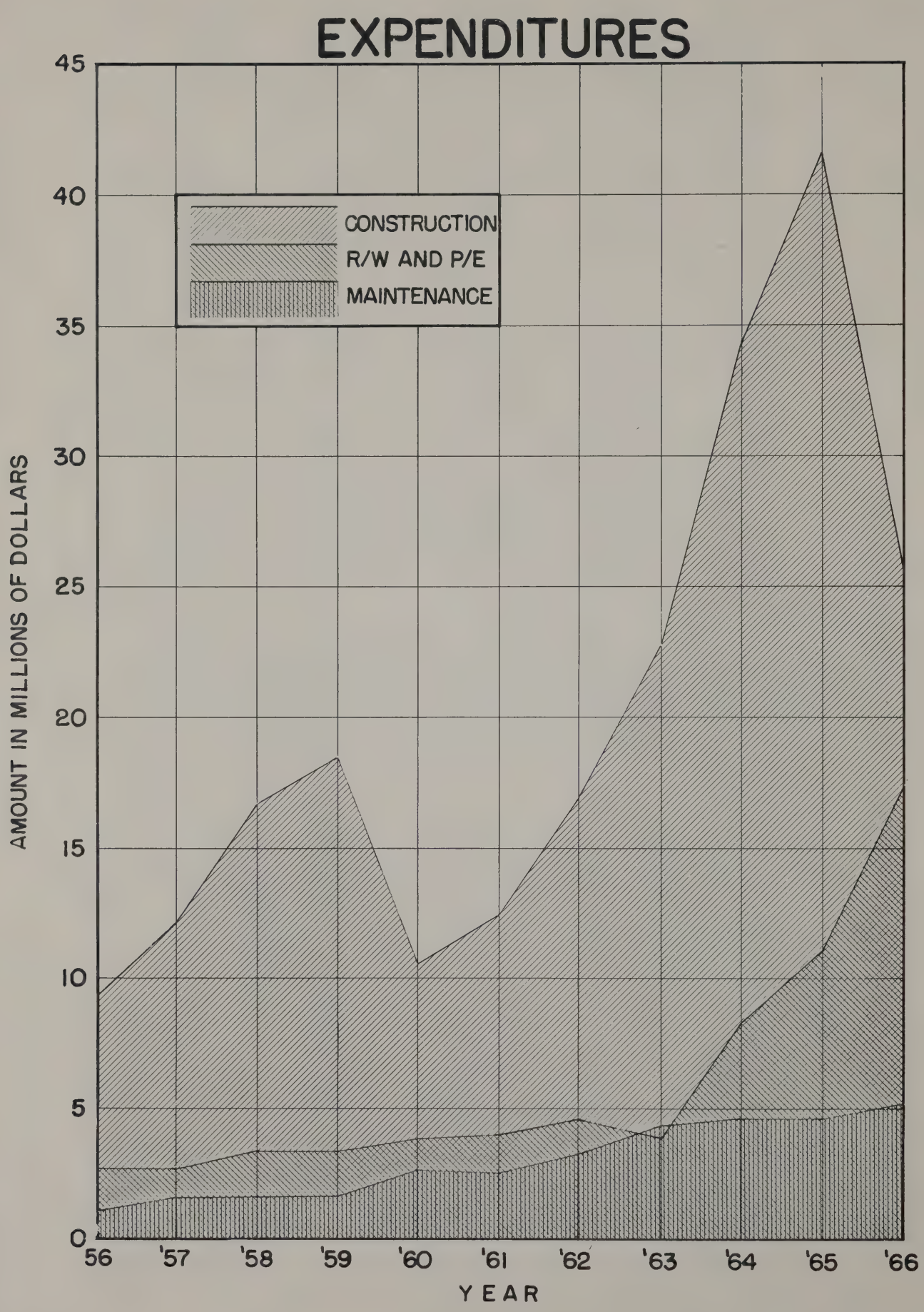
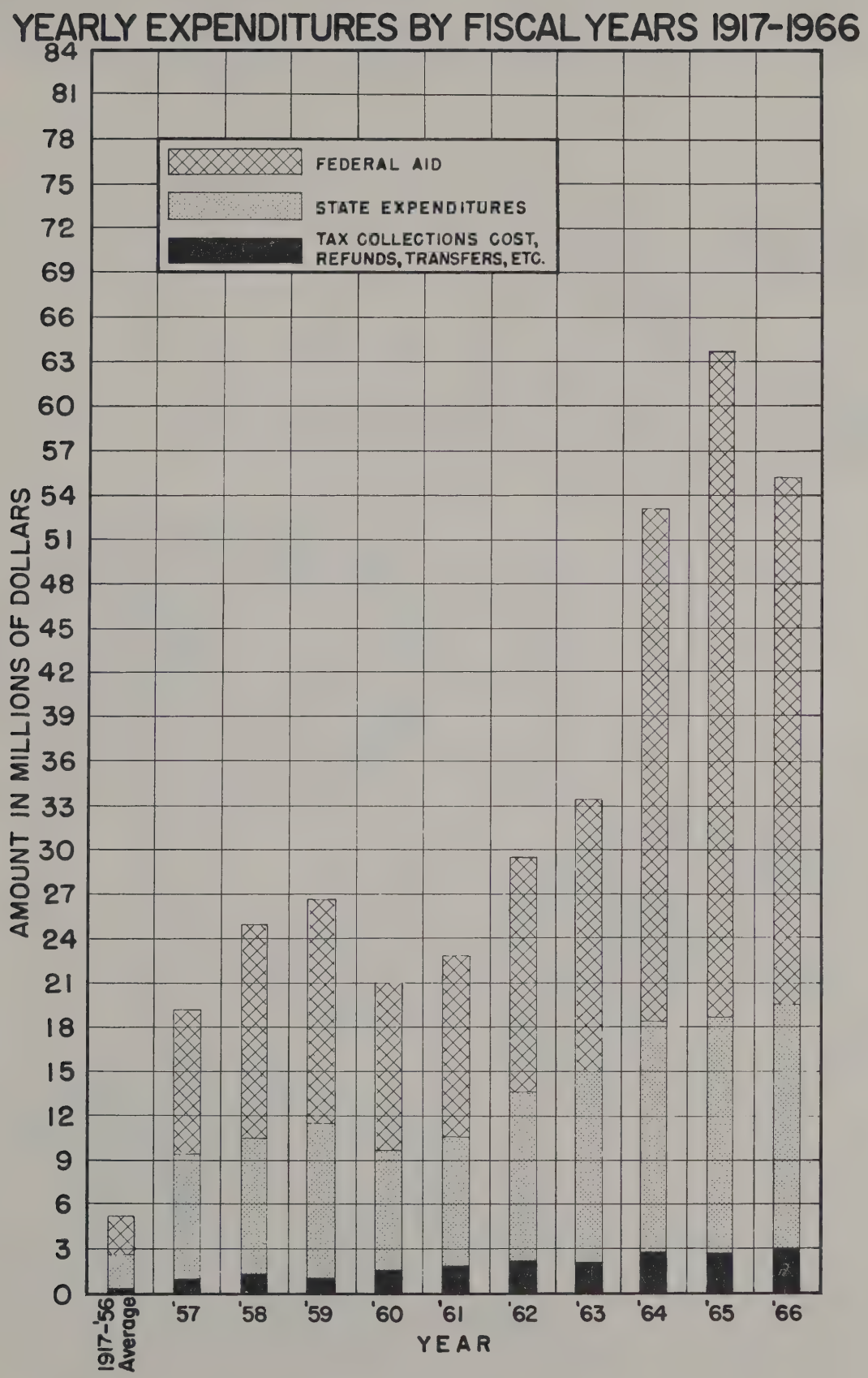
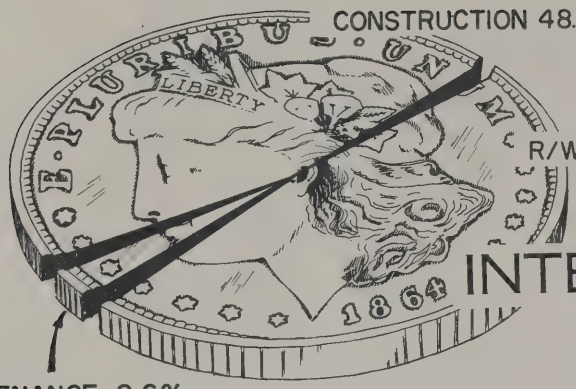

EXPENDITURES
CONSTRUCTION
R/W AND P/E
MAINTENANCE
AMOUNT IN MILLIONS OF DOLLARS
0
5
10
15
20
25
30
35
40
45
'56
'57
'58
'59
'60
'61
'62
'63
'64
'65
'66
YEAR

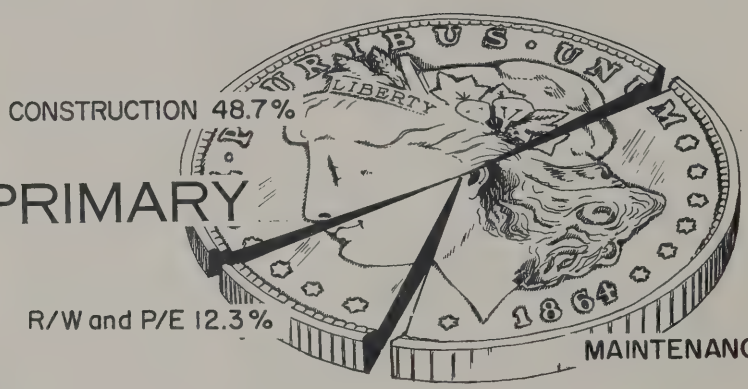
CHART 6


YEARLY EXPENDITURES BY FISCAL YEARS 1917-1966
AMOUNT IN MILLIONS OF DOLLARS
84
81
78
75
72
69
66
63
60
57
54
51
48
45
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
FEDERAL AID
STATE EXPENDITURES
TAX COLLECTIONS COST, REFUNDS, TRANSFERS, ETC.
1917-'56 Average
'57
'58
'59
'60
'61
'62
'63
'64
'65
'66
YEAR

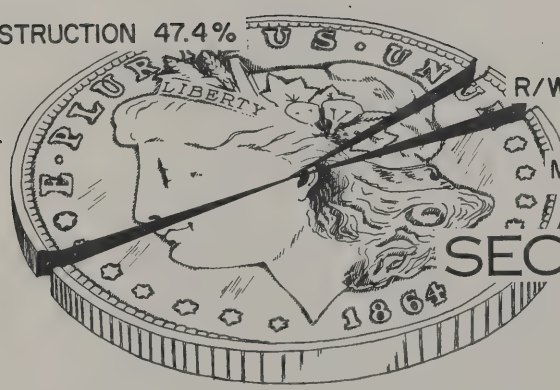
# EXPENDITURE PERCENTAGES BY SYSTEM TYPE



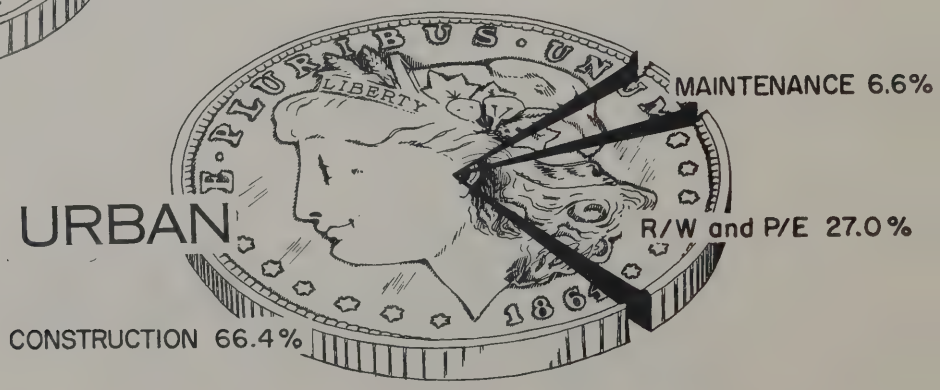

INTERSTATE




PRIMARY




SECONDARY




URBAN

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 25

ESTIMATED DISBURSEMENTS OF THE HIGHWAY DEPARTMENT FOR THE
1968-1969 BIENNIUM WITH COMPARISONS TO THE 1966-67

| | 1966 Actual | 1967 Work Program | Biennium Totals | 1968 Agency Request | 1969 Agency Request | Estimated Biennium Totals |
|---|---|---|---|---|---|---|
| DISBURSEMENTS: | | | | | | |
| Construction & Engineering | | | | | | |
| Federal (By Reimbursement) | | | | | | |
| Right of Way | 10,096,286.00 | 13,031,535.00 | 23,127,821.00 | 12,201,687.00 | 12,253,091.00 | 24,454,778.00 |
| Preliminary Engineering | 2,945,800.00 | 3,802,524.00 | 6,748,324.00 | 3,559,998.00 | 3,575,021.00 | 7,135,019.00 |
| Construction Engineering | 2,399,829.00 | 3,096,368.00 | 5,496,197.00 | 2,900,594.00 | 2,912,721.00 | 5,813,315.00 |
| Construction | 19,862,213.00 | 25,635,113.00 | 45,497,326.00 | 24,004,637.00 | 24,105,635.00 | 48,110,272.00 |
| Planning (Research & Investigation) | 269,222.00 | 348,460.00 | 617,682.00 | 325,084.00 | 326,532.00 | 651,616.00 |
| Sub-Total | 35,573,350.00 | 45,914,000.00 | 81,487,350.00 | 42,992,000.00 | 43,173,000.00 | 86,165,000.00 |
| State (Matching) | | | | | | |
| Right of Way | 5,078,017.56 | 4,798,203.16 | 9,876,220.72 | 4,388,628.16 | 5,225,193.16 | 9,613,821.32 |
| Preliminary Engineering | 401,619.43 CR | 378,000.60 CR | 779,620.03 CR | 345,615.60 CR | 411,762.60 CR | 757,378.20 CR |
| Construction Engineering | 627,278.50 | 592,233.16 | 1,219,511.66 | 541,433.16 | 645,193.16 | 1,186,626.32 |
| Construction | 2,209,065.09 | 2,086,660.94 | 4,295,726.03 | 1,908,225.94 | 2,271,385.94 | 4,179,611.88 |
| Planning (Research & Investigation) | 359,250.84 | 338,903.34 | 698,154.18 | 310,328.34 | 369,990.34 | 680,318.68 |
| Sub-Total | 7,871,992.56 | 7,438,000.00 | 15,309,992.56 | 6,803,000.00 | 8,100,000.00 | 14,903,000.00 |
| Sub-Total Construction & Engineering | 43,445,342.56 | 53,352,000.00 | 96,797,342.56 | 49,795,000.00 | 51,273,000.00 | 101,068,000.00 |
| Maintenance | | | | | | |
| Routine Roadway | 1,698,664.76 | 2,167,936.00 | 3,866,600.76 | 2,450,000.00 | 2,515,000.00 | 4,965,000.00 |
| Special Surface | 41,034.06 | 52,368.00 | 93,402.06 | 59,000.00 | 61,000.00 | 120,000.00 |
| Shoulders & Approaches | 123,285.97 | 157,338.00 | 2,806,623.97 | 178,000.00 | 183,000.00 | 361,000.00 |
| Roadside & Drainage | 1,217,229.29 | 1,553,473.00 | 2,770,702.29 | 1,755,000.00 | 1,801,000.00 | 3,556,000.00 |
| Traffic Services | 1,184,833.32 | 1,512,184.00 | 2,697,017.32 | 1,708,000.00 | 1,753,000.00 | 3,461,000.00 |
| Snow & Ice | 638,541.72 | 814,907.00 | 1,453,448.72 | 921,000.00 | 945,000.00 | 1,866,000.00 |
| Structures | 12,321.30 | 15,724.00 | 28,045.30 | 18,000.00 | 19,000.00 | 37,000.00 |
| Emergency - Floods, etc. | 302,514.62 | 386,070.00 | 688,584.62 | 436,000.00 | 448,000.00 | 884,000.00 |
| Sub-Total Maintenance | 5,218,425.04 | 6,660,000.00 | 11,878,425.04 | 7,525,000.00 | 7,525,000.00 | 15,250,000.00 |
| ADMINISTRATION | | | | | | |
| General Administration | 508,739.13 | 459,341.00 | 968,080.13 | 480,000.00 | 484,000.00 | 964,000.00 |
| Buildings (Includes Contracts) | 191,997.03 | 173,354.00 | 365,351.03 | 181,000.00 | 182,000.00 | 363,000.00 |
| Public Hearings | 4,193.64 | 3,787.00 | 7,980.64 | 4,000.00 | 4,000.00 | 8,000.00 |
| General Office (Headquarters) | 900,006.77 | 812,619.00 | 1,712,625.77 | 850,000.00 | 858,000.00 | 1,708,000.00 |
| Highways & Parks Magazine | 150,693.26 | 136,061.00 | 286,754.26 | 142,000.00 | 143,000.00 | 285,000.00 |
| State Road Map | 39,866.84 | 35,996.00 | 75,862.84 | 38,000.00 | 38,000.00 | 76,000.00 |
| Public Relations | 47,290.22 | 42,698.00 | 89,988.22 | 45,000.00 | 45,000.00 | 90,000.00 |
| Special Traffic Studies | 218,735.86 | 197,497.00 | 416,232.86 | 207,000.00 | 209,000.00 | 416,000.00 |
| Equipment & Plants | 655,748.15 | 592,076.00 | 1,247,824.15 | 619,000.00 | 624,000.00 | 1,243,000.00 |
| Headquarters Office Building | 164,312.54 | 148,359.00 | 312,671.54 | 155,000.00 | 156,000.00 | 311,000.00 |
| Recoverable Expenditures | 685,801.53 | 619,212.00 | 1,305,013.53 | 647,000.00 | 652,000.00 | 1,299,000.00 |
| Sub-Total Administration | 3,567,384.97 | 3,221,000.00 | 6,788,384.97 | 3,368,000.00 | 3,395,000.00 | 6,763,000.00 |
| Grand Total | 52,231,152.57 | 63,233,000.00 | 115,464,152.57 | 60,688,000.00 | 62,393,000.00 | 123,081,000.00 |

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

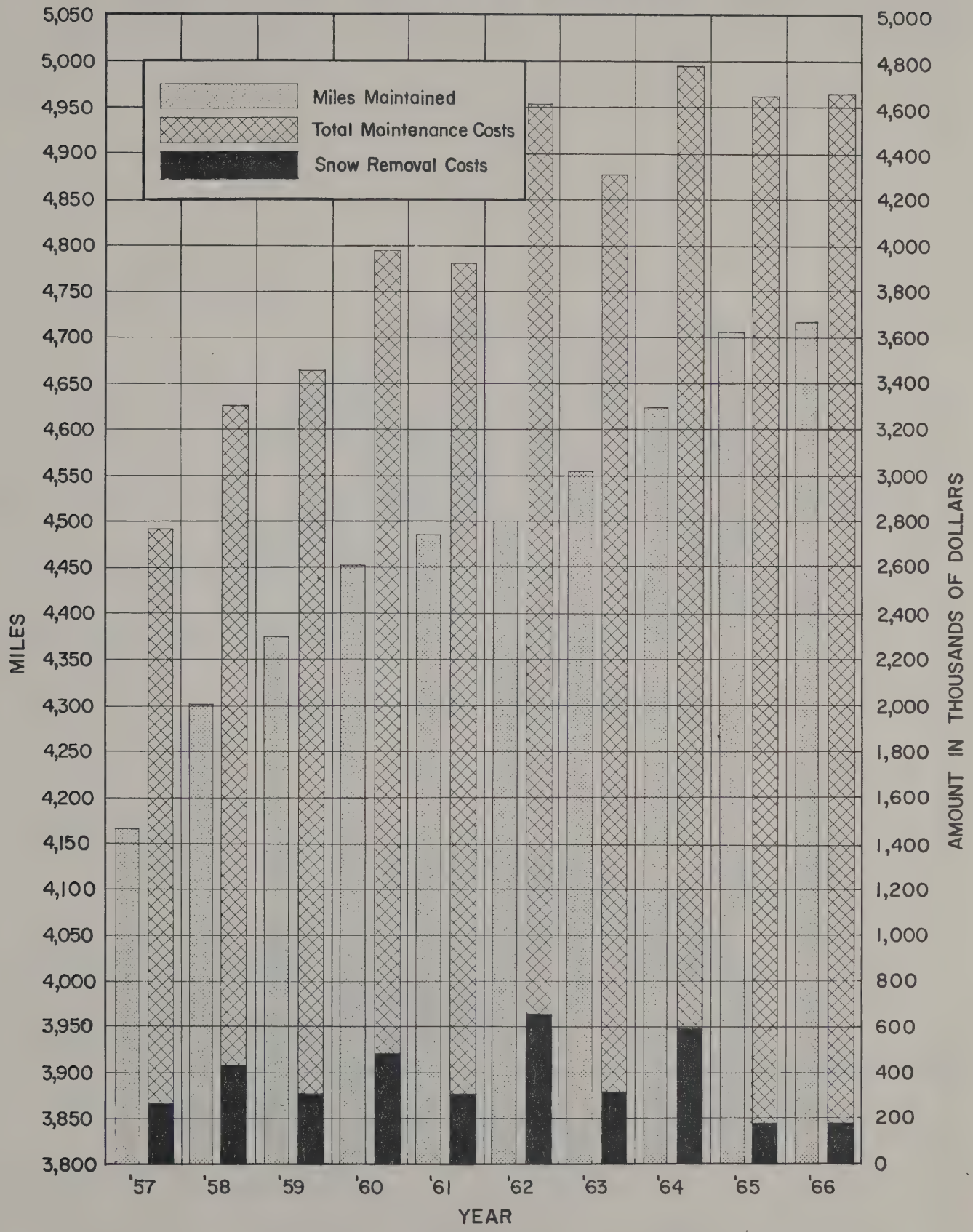
TABLE 26

COMPARISON THE LAST TEN YEAR PERIOD
CONSTRUCTION & ENGINEERING EXPENDITURES

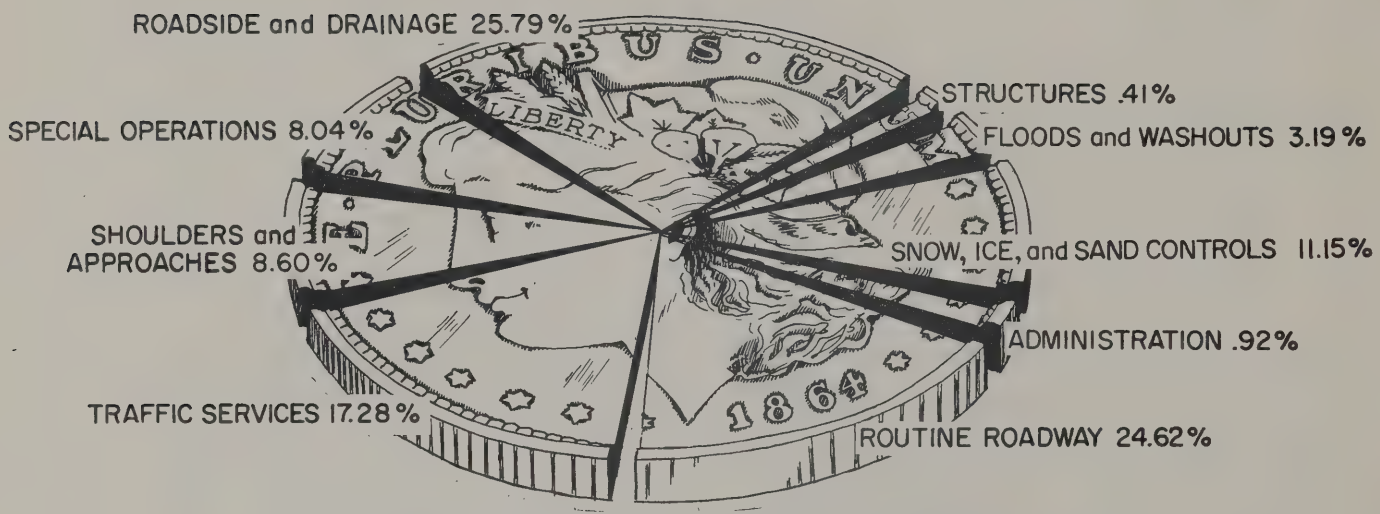
| PERIOD (FISCAL YR) | CONTRACTOR'S PAYMENTS | CONSTRUCTION ENGINEERING | PRELIMINARY ENGINEERING | RIGHT OF WAY (INCLUDES ACQUISITION) | SUB TOTAL | STATE CONST. ADD & BETTERS. | RESEARCH & INVEST. (PLANNING) | TOTAL CONST. & ENGINEERING |
|---|---|---|---|---|---|---|---|---|
| 1957 | 10,774,843.77 | 1,380,709.02 | 954,444.64 | 655,963.16 | 13,765,960.59 | 387,994.03 | 290,492.92 | 14,444,447.54 |
| 1958 | 15,305,862.64 | 1,372,105.82 | 1,094,137.02 | 471,636.73 | 18,243,742.21 | 276,108.01 | 399,518.65 | 18,919,368.87 |
| 1959 | 16,986,542.21 | 1,645,073.81 | 1,091,190.26 | 515,056.95 | 20,237,863.23 | 315,163.03 | 440,557.37 | 20,993,583.63 |
| 1960 | 9,509,236.61 | 1,147,603.58 | 1,494,399.38 | 1,202,330.73 | 13,353,570.30 | 358,700.49 | 505,856.98 | 14,218,127.77 |
| 1961 | 11,067,884.63 | 1,401,860.62 | 1,616,167.39 | 861,184.07 | 14,947,096.71 | 552,478.19 | 476,134.93 | 15,975,709.83 |
| 1962 | 15,174,577.23 | 1,880,994.87 | 1,715,583.89 | 1,488,413.98 | 20,259,569.97 | 576,260.15 | 508,255.68 | 21,344,085.80 |
| 1963 | 17,569,098.09 | 2,366,989.79 | 1,957,184.48 | 1,979,684.52 | 23,872,956.88 | 782,869.81 | 503,144.05 | 25,158,970.74 |
| 1964 | 29,480,587.62 | 3,782,837.13 | 2,499,803.66 | 5,860,308.07 | 41,623,536.48 | 779,091.88 | 630,375.15 | 43,033,003.51 |
| 1965 | 37,519,172.58 | 4,077,274.87 | 1,707,386.64 | 8,520,012.55 | 51,823,846.64 | 812,737.47 | 609,425.10 | 53,246,009.21 |
| 1966 | 21,229,905.12 | 3,027,107.50 | 2,544,180.57 | 15,398,353.90 | 42,199,547.09 | 1,048,803.02 | 628,472.84 | 43,876,822.95 |

CHART 8

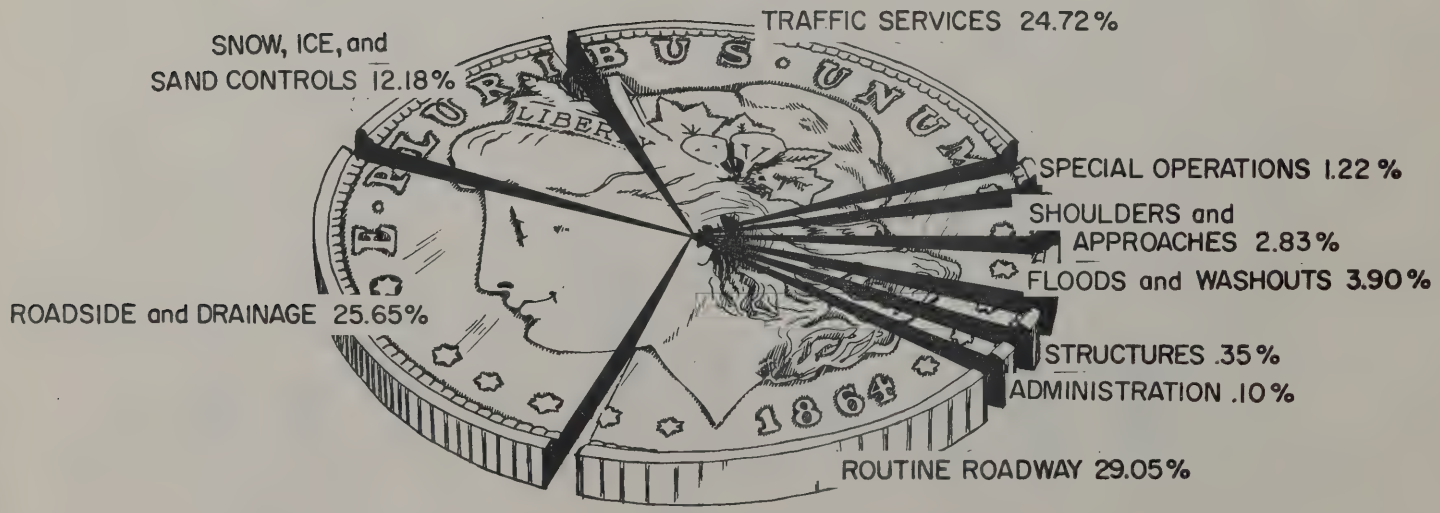
# COMPARATIVE MAINTENANCE COSTS



# MAINTENANCE EXPENDITURES




AVERAGE 1953 - 1964




BIENNIUM 1965 - 1966

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

COMPARISON OF EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON ALL ROADS MAINTAINED BY THE DEPARTMENT

TABLE 27

| | F.Y. 1965 | F.Y. 1966 | TOTAL | PERCENT |
|---|---|---|---|---|
| Routine Roadway Operations: | | | | |
| Patching Holes and ruts, spot sealing | $ 631,368.85 | $ 854,444.73 | $ 1,485,813.58 | |
| Dragging, blading and re-shaping | 26,752.44 | 35,507.37 | 62,259.81 | |
| Filling, trimming, expansion joints, cracks | 33,164.41 | 97,944.93 | 131,109.34 | |
| Applying light seal and blotter or chips | 477,267.27 | 710,767.73 | 1,188,035.00 | |
| SUB-TOTALS | $ 1,168,552.97 | $ 1,698,664.76 | $ 2,867,217.73 | 29.05 |
| Special Roadway Operations: | | | | |
| Applying dust pallatives | $ 52.13 | $ 564.97 | $ 617.10 | |
| Replacement of gravel, crushed stone | 1,003.72 | 7,243.90 | 8,247.62 | |
| Reprocessing bituminous surface | 5,059.32 | 213.25 | 5,272.57 | |
| Bituminous surface treatment | 72,921.40 | 33,011.94 | 105,933.34 | |
| SUB-TOTALS | $ 79,036.57 | $ 41,034.06 | $ 120,070.63 | 1.22 |
| Shoulders and Approaches: | | | | |
| Shoulder patch and minor washouts | $ 70,505.85 | $ 79,587.12 | $ 150,092.97 | |
| Bituminous shoulder treatment | 49,085.64 | 24,191.27 | 73,276.91 | |
| Reprocessing bituminous shoulders | 36,807.31 | 19,507.58 | 56,314.89 | |
| SUB-TOTALS | $ 156,398.80 | $ 123,285.97 | $ 279,684.77 | 2.83 |
| Roadside and Drainage: | | | | |
| Repair of cuts, fills, slopes | $ 458,396.48 | $ 313,390.05 | $ 771,786.53 | |
| Cleaning, retrenching drains | 200,442.93 | 142,901.90 | 343,344.83 | |
| Removal of weeds | 251,802.46 | 324,147.32 | 575,949.78 | |
| Removal of debris | 323,311.48 | 357,424.68 | 680,736.16 | |
| Landscaping roadsides | 11,467.44 | 10,990.62 | 22,458.06 | |
| Maintenance of sidewalks, dikes | 68,986.36 | 68,374.72 | 137,361.08 | |
| Halogeten control | .93 | | .93 | |
| SUB-TOTALS | $ 1,314,408.08 | $ 1,217,229.29 | $ 2,531,637.37 | 25.65 |
| Traffic Services: | | | | |
| Repairs to signs, safety devices | $ 715,071.47 | $ 339,608.84 | $ 1,054,680.31 | |
| Removal of advertising signs | 6,249.02 | 210,154.24 | 216,403.26 | |
| Traffic lane and center striping | 308,295.79 | 357,360.27 | 665,656.06 | |
| Maintenance of guardrails | 45,205.67 | 45,556.77 | 90,762.44 | |
| Highway and bridge lighting | 14,053.38 | 23,377.63 | 37,431.01 | |
| Maintenance of roadside rests | 57,476.68 | 71,129.00 | 128,605.68 | |
| Pedestrian crossing markings | 52,660.09 | 50,836.75 | 103,496.84 | |
| Patrolling | 55,850.55 | 86,809.82 | 142,660.37 | |
| SUB-TOTALS | $ 1,254,862.65 | $ 1,184,833.32 | $ 2,439,695.97 | 24.72 |
| Snow, Ice and Sand Control: | | | | |
| Snow fence and markers | $ 45,517.88 | $ 53,096.81 | $ 98,614.69 | |
| Removal of snow and ice | 386,126.09 | 366,337.83 | 752,463.92 | |
| Sanding, salting icy surfaces | 131,271.25 | 212,067.36 | 343,338.61 | |
| Open waterways and drains | 402.19 | 6,075.31 | 6,477.50 | |
| Maintenance road blocks | 598.52 | 964.41 | 1,562.93 | |
| SUB-TOTALS | $ 563,915.93 | $ 638,541.72 | $ 1,202,457.65 | 12.18 |
| Structures: | | | | |
| Cleaning, opening channels | $ 10,209.13 | $ 6,911.43 | $ 17,120.56 | |
| Repairs to structures | 4,295.68 | 1,797.42 | 6,093.10 | |
| Patching structures | 3,735.89 | 1,801.41 | 5,537.30 | |
| Maintaining pumping plants | 2,318.96 | 1,603.04 | 3,922.00 | |
| Bridge and culvert inspectors | 1,446.28 | 208.00 | 1,654.28 | |
| SUB-TOTALS | $ 22,005.94 | $ 12,321.30 | $ 34,327.24 | .35 |
| Special Maintenance, Floods, Washouts, etc.: | $ 82,639.57 | $ 302,514.62 | $ 385,154.19 | 3.90 |
| Total Direct Expenditures | $ 4,641,820.51 | | | |
| Maintenance Administration (Headquarters) | 10,206.12 | | 10,206.12 | .10 |
| Total for Fiscal Year | $ 4,652,026.63 | $ 5,218,425.04 | $ 9,870,451.67 | |
| Total Miles Maintained | 4,706.446 | 4,718.223 | | 100.00 |
| Average cost per mile (includes snow removal) | $ 988.44 | $1,106.01 | | |
| Average cost per mile (excludes snow removal) | $ 888.62 | $ 970.68 | | |

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 28

MAINTENANCE & SNOW REMOVAL COSTS

1918 - 1966

| FISCAL PERIOD | SNOW REMOVAL | GENERAL MAINTENANCE | TOTAL | MILEAGE MAINTAINED | AVERAGE COST PER MILE |
|---|---|---|---|---|---|
| 1918 - 1926 | $ 16,862.47 | $ 963,132.32 | $ 979,994.79 | | |
| 1927 - 1936 | 306,626.06 | 4,670,275.03 | 4,976,901.09 | | |
| 1937 - 1946 | 811,702.44 | 7,464,889.04 | 8,276,591.48 | | |
| 1947 - 1956 | 2,613,958.78 | 16,411,246.55 | 19,025,205.33 | | |
| Sub Total (1918 - 1956) | $ 3,749,149.75 | $29,509,542.94 | $33,258,692.69 | | |
| 1957 | 263,686.02 | 2,504,661.04 | 2,768,347.06 | 4,166.47 Mi. | $ 664.44 |
| 1958 | 430,682.84 | 2,879,731.76 | 3,310,414.60 | 4,303.89 Mi. | 769.17 |
| 1959 | 312,084.25 | 3,150,505.89 | 3,462,590.14 | 4,376.21 Mi. | 791.23 |
| 1960 | 482,449.72 | 3,497,714.05 | 3,980,163.77 | 4,452.98 Mi. | 893.82 |
| 1961 | 310,367.40 | 3,610,168.69 | 3,920,536.09 | 4,487.71 Mi. | 873.62 |
| 1962 | 654,463.11 | 3,957,520.30 | 4,611,983.41 | 4,500.80 Mi. | 1,024.70 |
| 1963 | 315,461.03 | 3,995,972.52 | 4,311,433.55 | 4,554.06 Mi. | 946.72 |
| 1964 | 592,420.49 | 4,191,246.58 | 4,783,667.07 | 4,625.02 Mi. | 1,034.30 |
| 1965 | 563,915.93 | 4,088,110.70 | 4,652,026.63 | 4,706.45 Mi. | 988.44 |
| 1966 | 638,541.72 | 4,579,883.32 | 5,218,425.04 | 4,718.22 Mi. | 1,106.01 |
| Sub Total (1957 - 1966) | $ 4,564,072.51 | $36,455,514.85 | $41,019,587.36 | | |
| Total (1918 - 1966) | $ 8,313,222.26 | $65,965,057.79 | $74,278,280.05 | | |

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